

# NetworkWorld

July 10, 2000 Volume 17, Number 28

The network portal: [www.nwfusion.com](http://www.nwfusion.com)

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**Carly S. Fiorina**  
President and CEO, HP

Tuesday, September 26, 9:00am-10:00am



**John H. F. Miner**  
Vice President and General Manager,  
Communications Products Group,  
Intel Corporation

Tuesday, September 26, 12:30pm-1:30pm



**Dr. Eric Schmidt**  
Chairman of the Board and CEO,  
Novell, Inc.

Wednesday, September 27, 9:00am-10:00am



**Jeanette Symons**  
CTO and Vice President, Engineering,  
Zhone Technologies, Inc.

Wednesday, September 27, 5:30pm-6:30pm

## Connect with Network Experts

The industry's best instructors, speakers and authors give you a world-class technical education in five days. Choose from 700+ hours of cutting-edge classes focused on benefits, risks and overall usability.

### **NEW! Strategic Interop: Linking IT to E-Business** **Monday, September 25-Tuesday, September 26**

Maximize your network infrastructure investment at this new two-day conference, which looks closely at common pitfalls in the relationship between business units and IT departments. The conference will show how to closely align your business goals with your IT infrastructure.

### **NEW TO NETWORLD+INTEROP** **LINUX Business Expo**

**Monday, September 25-Thursday, September 28**  
Learn how to leverage Linux to enhance your business productivity. Find out how low-cost Linux solutions can help your network and software development, and serve as a versatile end-user platform.

### **NEW TO NETWORLD+INTEROP** **ASP Summit**

**Wednesday, September 27-Thursday, September 28**  
Your success as a service provider depends on your ability to offer your enterprise customers both bandwidth and robust custom multiservice applications. ASP Summit covers strategies for success and pitfalls to avoid when putting together a viable applications offering.

### **VPN Day**

#### **Monday, September 25**

Control both costs and security in your enterprise network. Virtual private networks (VPNs) are often an ideal solution. VPN Day shows you how to implement or hone your VPN through real-world case studies and demonstrations of products hand-picked by a team of impartial experts.

### **Voice over IP Day**

#### **Wednesday, September 27**

Gain knowledge and tools you need to successfully integrate data and voice traffic over the same infrastructure. This unique seminar examines technological basics such as signaling, compression, transport and switching, as well as advantages, disadvantages and commercial prospects of the most popular VoIP technologies competing for dominance in this space.

### **General Conference**

#### **Tuesday, September 26-Thursday, September 28**

The general conference gives you critical education on how to plan, implement and operate a competitive infrastructure and services. The general conference focuses on key technologies and issues in enterprise networking. Choose from nine conference tracks that give you in-depth, current technical information: Enterprise Infrastructure, Wireless Technology and Services, Security, Content Delivery Networks, Enterprise Management, Networked Storage, Broadband Local Access, Converged Voice, Optical Networking.

For details on the conference offerings, go to  
[www.key3media.com/interop/atlanta2000/](http://www.key3media.com/interop/atlanta2000/)

### **Tutorials and Workshops**

#### **Sunday, September 24-Friday, September 29**

Focus on developing solutions to your company's most pressing challenges in full-day workshops and two-day tutorials. This year we are offering 22 new sessions. Participate in a full week of learning—from Sunday to Friday—led by some of the world's foremost technologists, authors, and networking and telecom experts. Learn which technologies are ready for your mission-critical network, and which ones provide the greatest benefits and savings; focus on TCP/IP, DSL, VPNs, multiservice backbones, IP multicast, multigigabit and terabit Internet routers, voice over IP, wireless, security, multiprotocol label switching, QoS, WDM, Ethernets, network analysis, Linux and more.

### **Network Forensics Day**

#### **Monday, September 25**

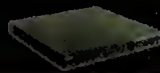
Optimal network performance is an absolute must in today's enterprise. Learn a detailed approach to diagnosing and optimizing your network systems, from desktop and applications to server—and everything in between. Top network analysts from Pine Mountain Group lead this one-day conference.

### **NEW! Service Creation Day**

#### **Tuesday, September 26**

Learn to leverage emerging service framework and technology enablers such as optics, IP service switching, Web customer network management (CNM) and application infrastructure provider (AIP) services. Gain valuable insight into the ASP market and practical instruction on creating and differentiating profitable, high-growth service offerings, positioning and pricing your services, locking customers in with Web CNM, selecting an AIP and more.





The leader in network knowledge

# NetworkWorld



July 10, 2000 Volume 17, Number 28

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**Ethernet and IP storm**

**factory nets**

GE's Fanuc plant

By Carolyn Duffy Marsan

**C**HARLOTTESVILLE, VA. — On the outskirts of this colonial town, you can catch a glimpse of how standard network technology and the Internet are revolutionizing the factory floor.

General Electric's Fanuc Automation plant, which produces more than one million printed circuit boards per year, is running TCP/IP over an Ethernet LAN on the control systems that operate its five manufacturing lines.

See Factory, page 79.

## Printing to get 'Net facelift

*Backed by industry heavyweights, IETF advances Internet Printing Protocol.*

BY CAROLYN DUFFY MARSAN

After more than a year of delays, the Internet engineering community has given the green light to an emerging technology that simplifies local network printing and enables remote printing over the 'Net.

The Internet Printing Protocol (IPP) replaces proprietary printing services with a single method for sending print jobs from a computer to any authorized printer connected to an IP network. Under development since 1996, IPP has the support of more than 25 companies, including Microsoft, Novell, IBM, Xerox, Lexmark and Hewlett-Packard.

Standardization of IPP was slowed by clashes between the vendor-led IPP working group and the leadership of the Internet Engineering Task Force (IETF), which questioned the protocol's design, scalability and security. The log-jam ended in late June when the IETF leadership voted to make two key IPP-related documents proposed standards.

The IETF leadership's decision was hailed by the printer industry as an important milestone for widespread acceptance of IPP. Final approval from the IETF on all IPP-related documents is expected to take another year, but it now appears to be a formality.

The IETF approval "tells the world that IPP is to be taken seriously," says Carl-Uno. See IPP, page 16

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**ARE YOU DOWN WITH IPP?**

Learn about the IETF's IPP working group, get a list of IPP-compliant products and download a tool to make Unix and Linux systems IPP-compliant.

**DocFinder**  
find it **8932** online

## Vendors to speed Web content delivery

BY APRIL JACOBS

Alteon and InfoLibria next week will separately roll out hardware and software aimed at speeding users' e-commerce Web sites.

Alteon will announce the

first two products in its new iSD family, which will feature encryption processing and automated content delivery to speed Web site response. For its part, InfoLibria will roll out the DynaCache 40 cache. See Alteon, page 14

## My breakfast with David

An hour with Cisco's VoIP Fellow.

BY JOHN DIX, EDITOR IN CHIEF

**I**t isn't every day you sit down for a one-on-one with a Cisco Fellow. After all, of Cisco's 21,000 employees, only nine are at that point in their careers where their talent and tenure make them too valuable to dedicate to a specific task.

Fellows specialize in certain technologies but get called on for everything from product conception/development to troubleshooting to doing due diligence on potential acquisitions.

See Cisco Fellow, page 18.

STELLA JOHNSON



David Oran, a Cisco Fellow focused on VoIP



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intel



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Security is the number one concern of every IT professional. The good news is that there's a proven solution you can trust.

## Without Bullet-Proof Security, Successful eBusiness Is Impossible

The only thing bigger than the opportunity that comes with putting your business on the Web is all the risk that goes with it.

Undetected attacks can strike at any time, from anywhere, in a variety of forms. Most sites can't even track every attempt. And new threats are developed every day, all over the world.

Without the right protection, eCompanies risk losing everything: data, customers, revenue, and more.

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Online business through eCommerce, corporate intranets, partner-to-partner transactions on extranets and websites, all need to be secured. Protecting the integrity and availability of intranet information is critical to all organizations.

Unfortunately, in the race to become Web-enabled, security has taken a back seat. IT managers often give themselves a false sense of security with a standalone or partial security solution. They forget that eCompanies need an integrated and comprehensive security solution that provides best-of-breed functionality.

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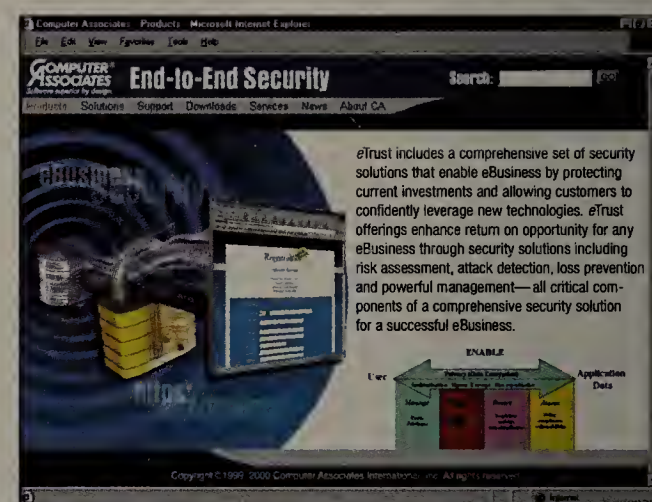
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# NetworkWorld

JULY 10, 2000

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- 10 IBM looks to simplify management of **digital credentials**.
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- 79 **The Scoop**: Many protocols populate factory nets.



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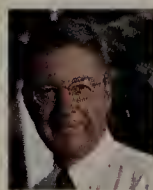
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Don't get blindsided by the marketing folks who put up a Web site on their own and then come to you in a panic when technical problems occur. Find out how you can lead your company's e-commerce efforts and boost your career at the same time. Page 48.

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**Backspin**: Fashion and IT: Give me Cobol or . . . Page 82.

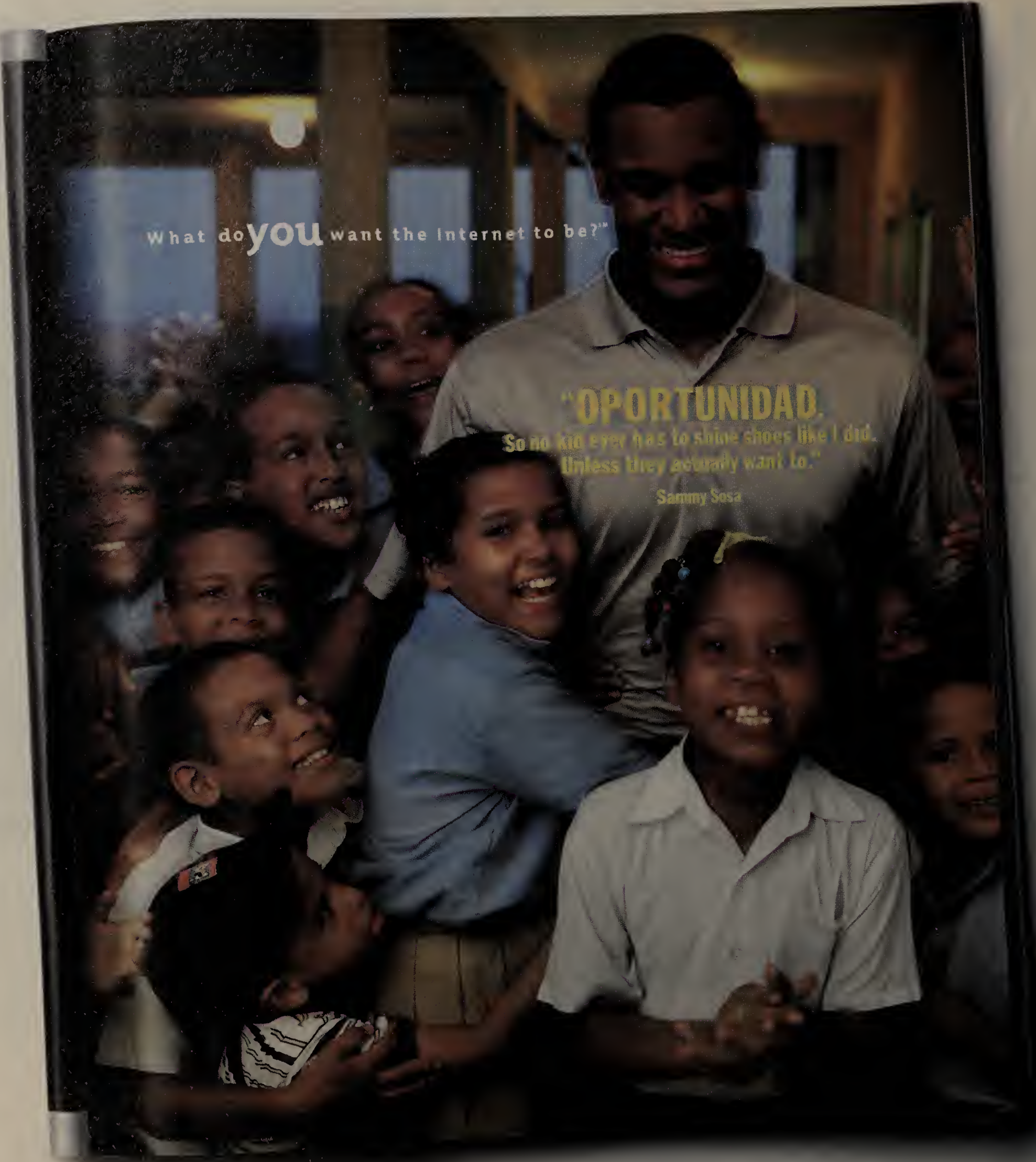
**'Net Buzz**: Here's hoping Goliath pummels Napster. Page 82.

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What do **you** want the Internet to be?"

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So no kid ever has to shine shoes like I did.  
Unless they actually want to."

Sammy Sosa

**eBusiness**

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## INTERACTIVE

### Small device war

- This week in Test Pilots, our new reader review program, it's a battle of the handhelds, as readers take on the Palm V and Hewlett-Packard's Jornada. Trixter really likes his Palm (although he wishes for better Outlook synchronization), while mgowins says the Jornada beats the Palm hands down. Read their reviews, then jump in with your thoughts.

**DocFinder: 8635**

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## WEBCAST: HACKING BACK

When is it right for you to take matters into your own hands and strike back at hackers? Security experts Mich Kabay and Winn Schwartau will help you learn what methods are available and when they should be used on the "The Networked World." Also, join Executive News Editor Doug Barney, 'Net Buzz's Paul McNamara and Gearhead/Backspin author Mark Gibbs. Register now for this live Webcast, which will air at 1 p.m., Friday, July 14.

**DocFinder**  
8347  
find it online

## Help Desk

- A reader is having problems loading a CD to his NetWare 5 server. With NetWare 4, he could load one onto the network and have his users share it, but NetWare 5 has him stumped. **DocFinder: 8935**

## FORUMS

### WorldCom/Sprint merger

- Readers are up in arms over WorldCom's relationship with Sprint. "Where is all the government concern about undue concentration of local phone service? I still can't switch my local phone service provider. That's injustice," a reader says. **DocFinder: 8936**

### Preparing your budget

- A reader is prepping his network and data communications budget and is looking for guidelines and tips. Can you help? **DocFinder: 8937**

## SEMINARS & EVENTS

### Creating the ultimate Web network

Learn how to design and maintain a secure Web infrastructure for today's intranets, extranets and e-business applications. Stay tuned for registration information on the upcoming event.

## What is DocFinder?

We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested info.

## BARNEY'S RUBBLE

*The best of the NetFlash daily newsletter*



### Do-it-yourself service helps SBC speed DSL installation

What is the biggest impediment to DSL growth? Is it the dozen-plus flavors that confuse the heck out of consumers? Is it the slower-than-expected speed and higher-than-expected cost?

Nah. It's all those darn trucks. You see, the phone companies have to send real people out to check the lines and get the customers hooked up. And that's a lot of manpower. SBC hopes to save on labor with a new DSL self-install kit. All the customer has to do is add a filter to the phone, load a bunch of software and maybe slap in a network interface card. With Windows PCs, all that is easier said than done, my friend.

**DocFinder: 8942**

### Coming soon: A PDA that listens

Every show I go to includes a whole bunch of folks poking Palm Pilots with pens. Well, by next year, these same people may have a new way to annoy me — by yelling at their handhelds. IBM and voice recognition standout Lernout & Hauspie are building prototype devices that have up to 25,000-word vocabularies. I just hope my Palm doesn't pay more attention to the loudmouth standing next to me. **DocFinder: 8943**

### New Samsung cell phone doubles as digital camera

Here's a nifty device. Samsung has a new mobile phone that doubles as a digital camera. According to the company, the device is perfect for those moments when you just need a camera, such as after a car crash. Of course, chances are the car crash was caused by talking on the stinkin' phone. **DocFinder: 8944**

— Doug Barney, executive editor, news

Sign up for this e-mail newsletter online. **DocFinder: 3850**

## COLUMNISTS

### Water Cooler

*The problem with peeping Toms*

Reviews Editor Keith Shaw takes on the Big Brother approach some companies are taking in watching over employees. **DocFinder: 8938**



### View from The Edge

*Selling to the ever-bigger Bells*

And then there were four — four local carriers, that is. Try penetrating that market if you're an equipment provider, David Rohde says.

**DocFinder: 8941**



### Compendium

*Apache's Web path*

A NetCraft survey points to Apache as the leading Web server; an at-home worker wants Linux to entertain his kids; and more on patents for everyday technologies. **DocFinder: 8940**





## NEWS BRIEFS, JULY 10, 2000

**Lane departs Oracle unceremoniously**

Ray Lane's eight years of achievement as president and chief operating officer of Oracle were reduced to a six-sentence press release on June 30 when the company announced his sudden resignation. Those six sentences included these three platitudes attributed to Oracle CEO Larry Ellison: "I am grateful to Ray for all of his efforts. He will be missed. We wish him nothing but the best." No reason was given for his departure, and Lane did not respond to a request for an interview. Lane was hired from consulting firm Booz, Allen & Hamilton in 1992, when Oracle was stumbling. He's widely credited with getting the company back on track, partly through his own efforts, but also through hiring key executives like CFO Jeff Henley. No successor has been named, and according to published accounts, Ellison may divide Lane's duties among Henley and two other executive vice presidents, Gary Bloom and Safra Catz.



**Former Oracle president Ray Lane is credited with getting the company back on track.**

However, IBM will remain in the Storage Networking Industry Association and the Fibre Channel Industry Association in an effort to maintain open standards and interoperability, Sullivan says. An EMC spokesman threw blame for the falling out back at IBM. "IBM is backing away from industry standards," he says, adding that Big Blue "is clearly putting competitive issues over the need for open standards."

Meanwhile, IBM and Compaq last week announced an agreement to sell each other's storage network products and ensure interoperability between their products. The two companies intend for the agreement to speed customer acceptance of open storage network technology, Compaq said in a statement.

**Microsoft adds legal muscle**

Microsoft last week strengthened its legal team by hiring a law firm that has expertise in Supreme Court matters. Attorney Carter Phillips and his Washington, D.C. law firm Sidley & Austin will help Microsoft argue that its antitrust case appeal should be heard by a federal appeals court and not sent directly to the Supreme Court for review. The new legal team will work alongside Microsoft's lead trial counsel, Sullivan & Cromwell, a Microsoft spokesman said. The U.S. District Court judge overseeing Microsoft's case, acting on a request from the Department of Justice, recommended last month that Microsoft's appeal be heard directly by the Supreme Court. It's up to the Supreme Court to decide whether it will actually accept the case.

**Papows setting post-Lotus course**

Former Lotus CEO Jeff Papows, who virtually disappeared from view after his January resignation, has resurfaced on the board of directors of one of Lotus' largest business partners and says he has a new "CEO role settled to be announced this fall." Papows was named to the IT Factory board last week and will advise the company on its acquisition strategy. IT Factory is known for its component-based development tools and prebuilt collaborative applications. Papows, who continues to work with Lotus as it transitions to his successor Al Zollar, was stung last year by a series of stories alleging that he misrepresented his biographical, military and academic records. He also was named in a sexual discrimination complaint brought by a former Lotus executive.



**Former Lotus chief Jeff Papows says he has a new CEO role lined up to begin in the fall.**

**IBM opts out of EMC-led alliance**

IBM's NUMA-Q unit recently resigned from the 50-member EMC-led FibreAlliance storage-area network (SAN) management standards organization, claiming the group wasn't "addressing the issues of interoperability and open standards for SANs." The NUMA-Q unit, which makes high-end Intel-based servers running Unix, was heavily reliant on EMC to provide it with powerful storage devices. "We feel that the FibreAlliance has resulted in an EMC-centric solution set and not a vendor-agnostic initiative," says Glenn Sullivan, an IBM product manager.

# WAN service promises LAN speeds, low costs

BY TIM GREENE

**SAN FRANCISCO** — Yipes Communications has a new VPN offering that makes high-speed wide-area networking more attractive.

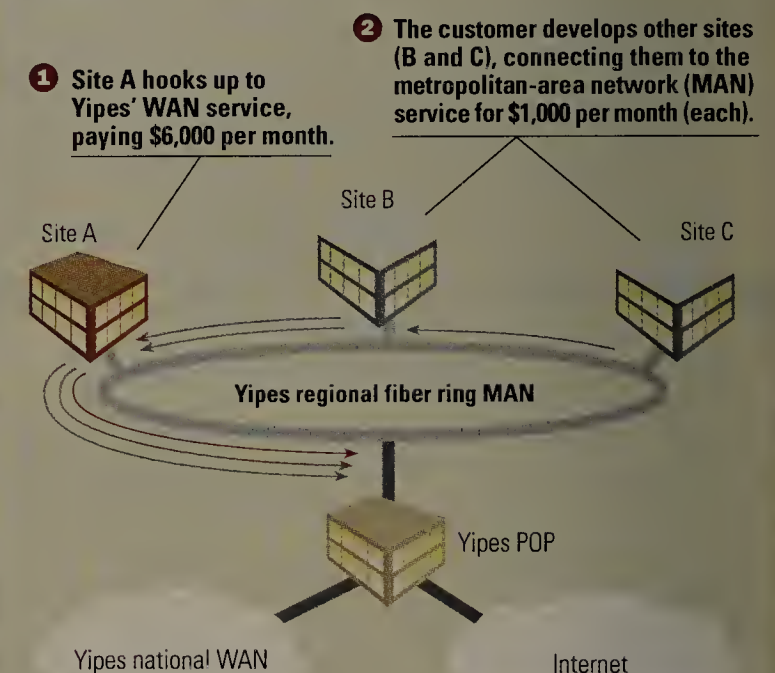
The service, Yipes WAN, connects sites via VPNs at LAN speeds and at prices that beat traditional WAN services,

as well as long-haul transport across Yipes' VPN backbone, the company says.

The cost of the service can be even more compelling. If a customer has multiple sites in the same metropolitan area, only one needs to connect to the WAN backbone. The remainder can be connected to that site via Yipes' less

**Yipes long-haul data**

**Yipes delivers low-cost WAN service by letting customers hook up all of their sites to one WAN connection. This example assumes 10M bit/sec connections at all sites and includes all equipment, local access, long-haul transport and Internet access.**



expensive metropolitan-area network service.

For example, Yipes charges \$19,600 per site to connect to its national VPN backbone at 45M bit/sec, the speed of a DS-3 line. By contrast, a local DS-3 line between two points in a metropolitan area would cost about \$45,000, says Michael Kennedy, an analyst with Network Strategy Partners in Boston. That would include only local transport.

The Yipes service includes VPN gear, routers, Internet access and local-loop access

expensive metropolitan-area network service.

In addition, because the service is based on Ethernet, corporate IT staff doesn't need training in frame relay or ATM to deal with its WAN, says Deb Mielke, principal with Treillage Network Strategies in Dallas. "If customers can use Ethernet, it cuts training and other operational costs," she says.

Yipes' services are available in 1M bit/sec increments, so customers are not constrained

See **Yipes**, page 80





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# IBM building e-business security package

BY MARC SONGINI

**HAIFA, ISRAEL** — IBM claims it has developed technology that could take much of the headache out of managing digital credentials for e-business.

Researchers at IBM's Haifa, Israel, lab have created software that IS professionals can plug into existing e-business applications for authenticating and approving end users. The system also lets IS or business managers define the type of security policy they want to implement, giving them flexibility to tailor it to their needs without extensive programming skills.

Dubbed IBM TrustManager, the Java software works by using credentials such as digital certificates to verify and

approve enterprise network or Web site access for customers, end users and partners. E-business buyers and sellers often do not know each other, needing to decide if they can trust each other enough to do business.

Managing digital credentials can be a painstaking process. According to Amir Herzberg and Yosi Mass, two of the lead researchers on the TrustManager project, there are few established certificate authorities, and the use of the technology is not widespread.

E-businesses typically must accept certificates from a pre-established list issued by a certificate authority such as VeriSign, which is often time-consuming.

With the IBM technology, these businesses could instead

use certificates from any other partner they have done work with or from a marketplace that issued digital certificates to member companies. If an unknown vendor were to approach the distributor, all that would be needed is a credential from a partner of the business or their partner's partner, depending on what the business deems acceptable.

Relying primarily on the X.509 V3 certificate format, TrustManager can run on Windows NT, Unix or other server platforms. Using an API, it can be attached to existing applications, such as an HTTP server, for internal or external Web sites. Acceptable credentials might include a public-key/private-key mix, certificates signed by the issuer, a docu-

ment retrieved from a company database or a record of a transaction.

TrustManager automatically collects accepted credentials in a database so IS staff are freed from entering them manually. The application also knows when to cancel an expired or revoked certificate and can be programmed to issue a credential for a fixed time period.

Working on a graphical user interface, TrustManager users write policy rules in an XML format that spells out, for example, how many certificates potential customers must have and how many site resources they are allowed to access. For companies that want to let customers remain anonymous, TrustManager can be configured to verify that an end user has access to resources without revealing his identity.

TrustManager also includes a software agent that goes out on the Web and locates certificates that might be needed to verify a particular vendor.

Although IBM doesn't comment on unannounced products, TrustManager may find its way into the company's lineup within six months, perhaps as an add-on to the Tivoli SecureWay network management product line. Tests indicate the software also will work with IBM's WebSphere application server, IBM says.

The technology could be a useful thing to implement for security, says one network manager with a large insurance firm who requested anonymity. However, one caveat is that a user must rely on the certificates of business partner or other sources, firms that might not be observing due diligence when issuing them, creating security risks, he says.

He adds that the technology could become widespread, as e-signatures are going to be important in the future of 'Net commerce. He says he expects others companies to offer similar products.

A free version of TrustManager is available at the IBM developer's alphaworks site: [www.alphaWorks.ibm.com/tech/keyman](http://www.alphaWorks.ibm.com/tech/keyman). ■

## SBC enters Texas long-distance arena

*But Qwest takeover of US West doesn't herald more long-distance apps soon.*

BY DAVID ROHDE

**SAN ANTONIO** — SBC Communications today becomes the second regional Bell operating company to begin long-distance service in its home state. However, prospects for a nationwide wave of RBOC long-distance offers remain remote until next year.

On June 30 the Federal Communications Commission approved SBC's application to offer long-distance service in Texas. SBC subsequently set

July 10 as the date it will begin service under its new Southwestern Bell Long Distance brand name.

Last week SBC revealed its new long distance service rates that range from 6 to 9 cents per minute for consumers and 4.2 to 14 cents per minute for business users. Yet corporate users in Texas are unlikely to rush to renegotiate their long-distance contracts. When Bell Atlantic became the first RBOC to win long-distance approval — for its home state of New York — it began with a straight voice offer and waited months before fleshing out a private line, frame relay and ATM service suite.

SBC officials say that data and long-distance voice service bundles are available to business users, but pricing details were not available at press time. SBC is also targeting the state's Hispanic and Asian populations for services that include the lucrative international calling market.

By coincidence, SBC's Texas approval came the same day US West completed its merger with broadband upstart Qwest Communications, which has promised to push US West to get long-distance authority

faster than it would on its own.

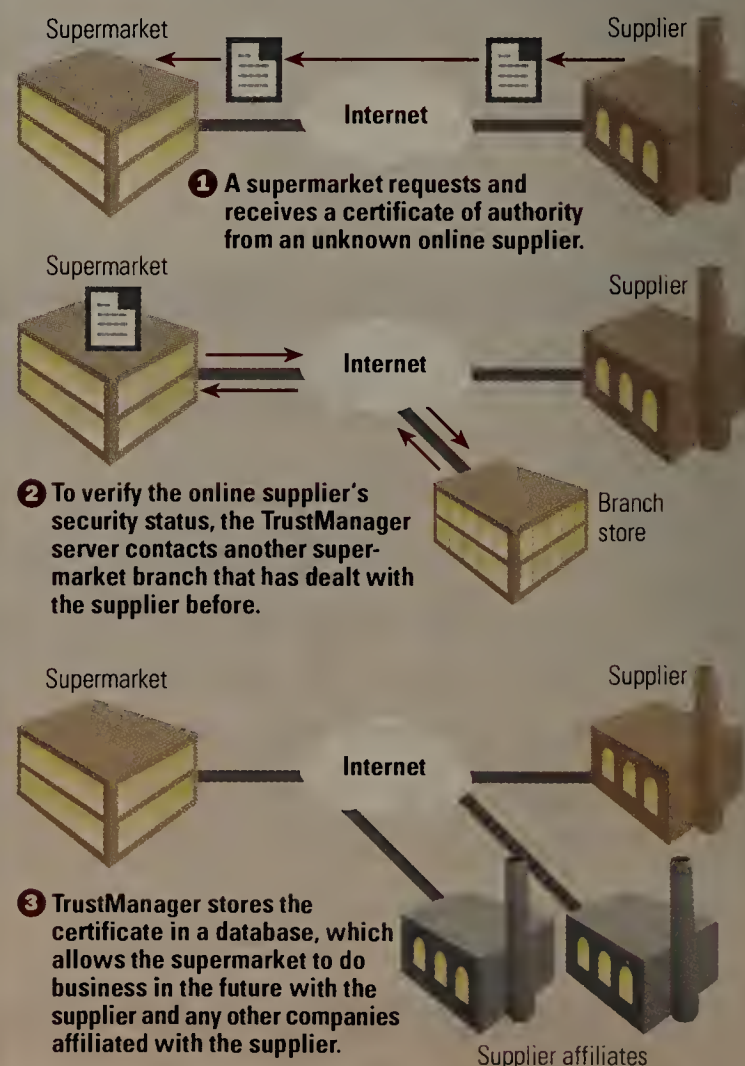
But Qwest President Joe Nacchio last week said the combined company — now known in its entirety as Qwest — won't apply for long-distance authority until it installs a new release of back-office software due in December. Both the New York and Texas approvals have centered around independent tests of RBOC systems that enable local competitors to submit orders electronically.

Indeed, the FCC's approval of SBC's Texas application came after much debate over SBC's own provisioning systems. "This approval did not come easily," said FCC Chairman William Kennard in a statement. Kennard said he had challenged SBC to improve its methods of unbundling local loops and electronically linking to local competitors' ordering systems. He said SBC had "responded in full" to those challenges.

AT&T wasn't so sure. In a statement, AT&T charged that a number of "serious concerns" about SBC's systems remain unresolved, adding that it was leaving open its options to decide "what further steps may be appropriate." ■

### IBM's trust-building technology

IBM's new technology offers an XML-based framework around which e-businesses can create a set of rules for doing business with those they don't know. For example:



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# Red Hat rolls out High Availability Server

BY DENI CONNOR

RESEARCH TRIANGLE PARK, N.C. — IT managers can better manage traffic and ensure uptime for their Web servers with this week's release by Red Hat Software, the Linux vendor claims.

Red Hat High Availability Server 1.0 lets network professionals cluster two Linux, Unix or Windows NT servers for failover or load-balancing purposes. The idea is to avoid downtime or traffic bottlenecks on servers that provide IP-based functions, such as Web or FTP servers, mail gateways and VPN support.

"I am looking to use clustering technologies for the Unix and Windows NT hosts on my network," says Gary Mansell, senior technical analyst for Ricardo Consulting Engineers in West Sussex, England. "I want to failover and load balance two server hosts so that during normal working conditions the load is spread between two servers but when one crashes, the other takes over its work as well as its own."

Mansell manages 300 servers and estimates that server downtime costs him lost productivity of more than \$150 per user per hour.

During configuration of the Red Hat cluster, the administrator decides whether the software will be used in failover mode or as a virtual server. In Fail-over Service mode, two servers are connected to each other over the network. One server is inactive and waits for the other server to fail. A signal called a heartbeat is continuously sent from the primary to the standby server that indicates the primary server's working condition. When the primary server has to be taken down for maintenance or fails (signaled by the heartbeat disappearing), the standby server takes over.

In Linux Virtual Server (LVS) mode, two servers front-end groups of Web, FTP or other servers to balance traffic between them. LVS can front-end heterogeneous groups of NT, Solaris or Linux servers and supports a variety of user-configurable routing methods, including round robin, least connections and IP masquerading.

In round-robin routing, the first request goes to the first server, the second request to the second server, and so on. Least-connection routing allocates traffic to the server with the least number of connections or traffic. IP masquerading is a way for servers to access the 'Net as if they are sharing the same 'Net address. The technique provides a secure

way to hide the internal network from outsiders and saves on Internet IPv4 address space.

IDC, a market research firm in

Framingham, Mass., estimates that Linux grew faster than any server operating system during the past two years and accounts for about 25% of the market.

NetCraft, an Internet consultancy in Bath, England, reported 36% of all Web sites run on Linux servers.

Red Hat High Availability Server runs on Intel platform servers of any configuration. Software for each two-node cluster is \$2,000. It is available immediately.

Red Hat: [www.redhat.com](http://www.redhat.com)

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Linux

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# VPN software from IRE embraces Win 2000

BY TIM GREENE

BALTIMORE — Customers who don't want to upgrade every PC in

their network to Windows 2000 but are looking to base their corporate VPN on Windows 2000 Server can now do so with the help of Information

Resource Engineering (IRE).

IRE this week will release a new version of its VPN client software that is compatible with Win 2000 Server and

can support clients for earlier Windows operating systems. Using IRE's SafeNet/Soft-PK VPN client Version 5.0, customers can support Windows 95, 98 and NT PCs so they will interoperate with VPNs based on Win 2000 Server, IRE says.

Without such support, customers would have to upgrade every remote PC to Win 2000, a daunting task, says Jeff Wilson, an analyst with Infonetics Research in San Jose.

IRE, which has focused on IP VPNs since 1995, is the No. 2 maker of VPN clients, behind Microsoft. Microsoft clients have had VPN capabilities since 1995. IRE, a \$23 million company, has sold VPN client software since 1995, and its technology is integrated in VPN equipment made by 3Com, Cisco, Internet Dynamics, Nokia/Network Alchemy and Lucent, among others.

SafeNet/Soft-PK has some management features that Win 2000's client lacks, he says. For example, if a user wants to alter the security policies for an entire group of users, IRE has the tools to do so; Microsoft does not.

## Undercover client

**IRE sells its client software to other vendors, so if you buy VPN gear from the following companies, you will get IRE's client:**

- Furukawa
- Netscreen
- RapidStream
- SonicWall

The new client also supports non-IP clients on an IP VPN. Part of supporting Win 2000 Server requires SafeNet/Soft-PK to support Layer 2 Tunneling Protocol (L2TP), which is integral to the most secure type of VPN Win 2000 supports.

Unlike other tunneling protocols, L2TP encapsulates the original packet in a separate IP packet. So NetBEUI or IPX packets, for example, can be wrapped in a L2TP IP packet that can cross an IP VPN.

Version 5 also has a new keep-alive feature that automatically reestablishes VPN sessions when they are interrupted. Remote users are required to do nothing to reestablish the session, IRE says. So if a security association needed to maintain a session that expired and ended the session, a new one would be set up.

The new client also can be configured with logon information for more than one VPN server. If the primary server is unavailable, the client will automatically seek a backup.

SafeNet/Soft-PK is available for \$79 per client. Upgrades from earlier versions cost \$39 per client.

IRE: [www.ire.com](http://www.ire.com)

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# Enterprises won't let .Net influence Windows 2000 plans

BY JOHN FONTANA

IT executives are sticking with their schedules for introducing Windows 2000 and ignoring the impending clash with Microsoft's shift in strategy to a Windows-based Internet platform.

Most enterprise customer plans for Win 2000 deployments will be executed over the next 12 to 24 months, according to IT executives and analysts. During that time, however, Microsoft will be entrenched in developing its

Internet strategy, called Microsoft .Net, and its new .Net operating system and server lineup.

The contrast means that as enterprise customers are completing rollouts of Win 2000, which Microsoft calls its most important product ever, the software giant will be pushing them toward .Net, its "bet the business" strategy. However, Microsoft has said it will continue to develop an operating system without .Net services.

The intersection of the two strategies could become a tricky crossroads for users.

"Right now we are going ahead with our Windows 2000 rollout as planned," says Kevin Benson, network and PC support manager for the South Carolina Department of Parks, Recreation and Tourism in Columbia, S.C. "We are watching .Net, but from a practical standpoint, I need to see more flesh on the concept so I can evaluate what



Microsoft CEO Steve Ballmer has been pushing .Net as critical for enterprises.

it means for my enterprise."

Microsoft will add flesh to the concept this week at its annual Professional Developers Conference in Orlando, Fla., where it may announce more details about .Net.

Benson says he will look for

Microsoft to evolve Win 2000 into .Net and provide a reasonable migration path. "I'm not

worried about getting left out in the cold," he says.

Microsoft CEO Steve Ballmer is already stressing .Net's relevance for enterprise customers, including better enterprise application integration and desktop-to-data integration. Ballmer also says .Net will facilitate business-to-business integration through tools such as BizTalk Server 2000 and business-to-consumer electronic commerce by simplifying Web sites for end users.

But the fact remains that the taxing upgrade to Win 2000 will be followed or combined with a transition to integrate corporate systems with the Internet. The transition will keep IT executives on their toes because every server and client from Microsoft will get an XML overhaul in the next two years to foster platformwide integration.

"Maybe that transition is five years down the road for us, but we won't be changing our current rollout of Windows 2000 to accommodate it," says Jim DiSantis, IT manager at Delphi Packard Electric in Warren, Ohio. "You can get screwed when you start to look at a platform the size of .Net. When you start to mix and integrate things, you are asking for problems."

Integration is the hallmark of .Net, not only among Microsoft products, but also with Internet platforms such as Unix and Linux.

Microsoft is encouraging IT executives not to blink on the road to introducing Win 2000. The software giant claims the operating system will eventually mesh with the company's new focus on the .Net.

"Enterprises should keep going on their Windows 2000 deployments because it will take a while for .Net to develop," says Steve Guggenheimer, director of consumer strategy for Microsoft. "But the servers that enterprises are buying today are on the .Net path. Over time those servers will be updated with XML to interact with Internet services and .Net interfaces."

Microsoft plans to evolve Win 2000 into Windows .Net early next year. The Win 2000 successor currently in development, will be released next year as Windows .Net 1.0. ■

**Alteon,**  
continued from page 1

device, a high-end hardware and software product that provides about twice the processing power and memory of its current products, with dual 700-MHz chips and 2G bytes of memory. The cache has redundant power supplies and mirrored disks for higher availability.

While InfoLibria's and Alteon's announcements address different needs for e-commerce and business-to-business Web sites, they are related in that they both aim to speed the process of serving up content.

The first two Alteon iSD products are the iSD Accelerator, aimed at offloading Secure Sockets Layer security processing functions from a Web server, and the iSD Akamaizer. By offloading the security processing, a Web server could be freed up to handle other content requests more quickly. The Akamaizer is designed for Akamai network users who want to automate the process of putting Web content on Akamai's delivery network. Both products connect to an Alteon Web switch.

The Akamaizer also lets network professionals set policies on content to be placed on the Akamai network. That process normally would require manual coding, but the Akamaizer automates the procedure.

Alteon will announce other iSD products aimed at speeding and simplifying management of e-commerce and Web sites but would not disclose when those will be introduced.

Unlike stand-alone devices that allow for encryption-related



Alteon's iSD Accelerator offloads security processing functions from a Web server.

processing, the iSD products can be managed through the same tools used by an Alteon Web switch, say sources briefed by Alteon. They say iSD products should let users deploy new services more easily than if they deployed stand-alone devices that need to be maintained and configured individually.

The products differ from Alteon's Web switches, which provide Layer 4 through Layer 7 network functions such as URL-based switching. Sources say the new products mark Alteon's entry into the e-commerce services market, with offerings that let network managers provide features such as automated content delivery and higher-speed secure transaction processing.

At Computer.com, Alteon's new products are drawing interest for their ability to take the weight off Web servers and speed response time for customers. "One of the things we have noticed is that when we push secure pages out, they take up enough bandwidth to notice — about 10% more CPU utilization," says d'Mitri DeVos, manager of system operations at Computer.com, a resource site for computer users. "We want to offload that processor power and let the Web servers focus on serving up the con-

tent they need to."

InfoLibria says DynaCache's improved file system on its operating system software can handle Web server caches more intelligently than previous InfoLibria products do.

For network managers who are putting caches in front of their Web servers, the improved file system means faster response times for customers, says Kevin Lewis, marketing director at InfoLibria. That's because the cache now knows how to store related objects close to one another — reducing the amount of time it takes to put the objects together that make up a page.

InfoLibria's DynaCache 40 is designed to sit in front of a Web server to provide content that is frequently requested or is static. Cache devices speed response time for requests by storing that static or popular content. They offload the task of putting the objects together and serving them up as Web pages, which frees the Web server to complete more compute-intensive tasks, such as putting together dynamic content requests like shopping carts and security-related functions.

Alex Benik, an analyst with The Yankee Group in Boston, says the DynaCache 40 serves a growing need for companies with e-commerce and Web sites: the ability to address requests based on the type of content they are serving and the type of network they have deployed to handle requests. For example, the DynaCache 40 has been optimized to handle requests for caches in front of a Web server.

"When you put a cache in front of the Web server, it's

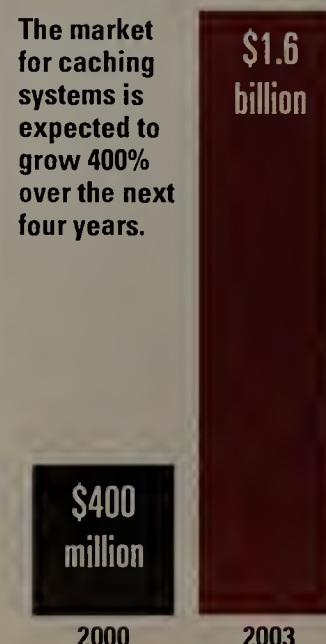
going to get much higher hit rates," Benik says. "Using caches to front Web servers is a growing trend because it frees up your Web servers from having to deliver static content, so you can concentrate them on doing database and processing transactions."

Benik also notes that the DynaCache takes up four rack units — making it an economical use of expensive host space in a data center. The DynaCache also allows network managers to block URLs with inappropriate content from being posted.

Alteon's iSD Accelerator and iSD Akamaizer, which will be priced between \$15,000 and \$25,000 when they ship in the fall, can be connected to an Alteon Web switch. InfoLibria's DynaCache 40 is available now and costs \$44,995. ■

## Cache market boom

The market for caching systems is expected to grow 400% over the next four years.



SOURCE: THE YANKEE GROUP, BOSTON





## AT 178 MPPS, WHO CARES ABOUT AERODYNAMICS?

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IPP,  
continued from page 1

Manros, chair of the IPP working group and a principal engineer with Xerox. "It gives confidence to all the companies out there implementing IPP in products. And it should get a clear message to customers that IPP is something they should be looking for in products they're going to buy. . . . IPP is the way that printing is going to be done in the future."

IPP lets corporate network professionals eliminate multiple proprietary network printing protocols used in Windows, NetWare, Unix and Apple operating systems. Having one printing protocol will ease training and support requirements as well as reduce the costs associated with sending documents long distances by overnight mail or fax.

"This is the first time that the major printer manufacturers and print service providers have converged on a single printing protocol," says Don Wright, chairman of the Printer Working Group and director of strategic and technical alliances for Lexmark, a supplier of printing products. "From a help desk perspective, companies are going to be able to converge three or four or five protocols, which makes the support issue much easier."

Wright says IPP also will enable a new class of Internet-based printing services. "IPP is the first step in bringing printing to the Internet that is more than just printing out a Web page," he says. "Users will be able to print documents either within their enterprises or among enterprises instead of sending faxes."

## A universal way

IPP provides a universal way for an end user to find out about a printer's capabilities, submit a print job to a printer, check on the status of a printer or print job and cancel a print job. The printer can be located anywhere on the Internet, from the supply room around the corner to a field office overseas to a commercial printing shop in

town.

IPP has built-in security features that lets a printer authenticate users and accept or refuse a print job based on who is sending it. IPP also supports encryption of docu-

remotely."

IPP is built on top of HTTP, which in turn runs over TCP/IP. IPP traffic is sent as a Multi-purpose Internet Mail Extensions-type using HTTP's feature for posting informa-

print it.

Novell supports the features of IPP 1.0 in NetWare Enterprise Print Services, and Apple has committed to support the IPP standard in a version of MacOS due out next year.

Meanwhile, Easy Software Products of Hollywood, Md., has developed an open source version of IPP 1.0 and 1.1 for Unix and Linux systems that is available for free at [www.cups.org](http://www.cups.org).

"Unix in particular is very poor at network printing," says Michael Sweet, cofounder of Easy Software Products. Sweet says IPP will replace the aging Line Printer Daemon protocol used on most Unix systems and provide a common way for Unix workstations and PCs to submit print jobs.

"IPP is going to solve a lot of problems with cross-platform printing," Sweet says.

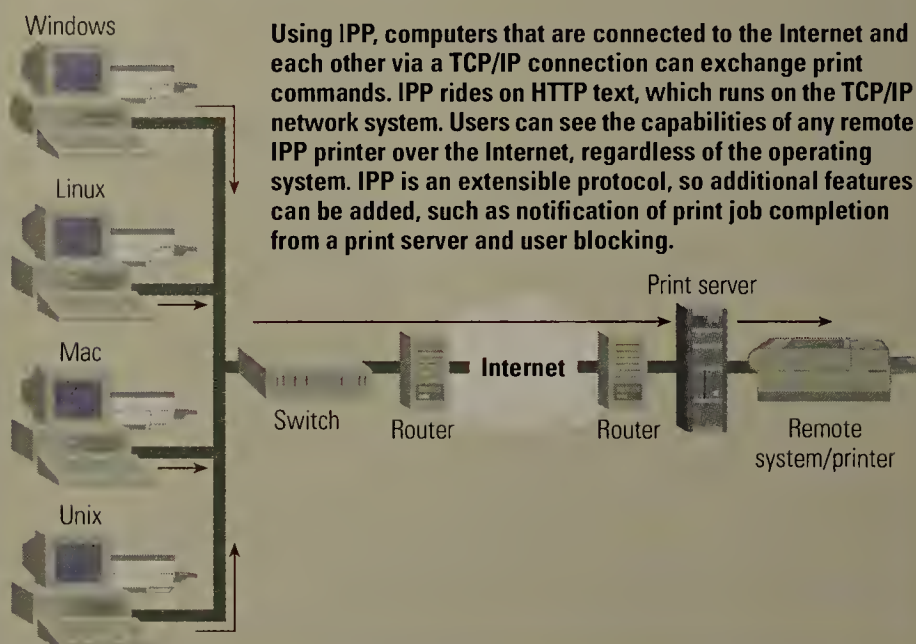
On the print server and printer side, Xerox has announced its new

network printers will support IPP as has Lexmark.

HP is shipping an IPP-compliant version of its JetDirect Print Server software, and IBM is shipping an IPP-compatible print server for its 390 mainframe that can support hundreds of printers. ■

## The future of printing?

Internet Printing Protocol allows computers to send print jobs to any IPP-compatible printer over the Internet.



Using IPP, computers that are connected to the Internet and each other via a TCP/IP connection can exchange print commands. IPP rides on HTTP text, which runs on the TCP/IP network system. Users can see the capabilities of any remote IPP printer over the Internet, regardless of the operating system. IPP is an extensible protocol, so additional features can be added, such as notification of print job completion from a print server and user blocking.

ments using the Secure Sockets Layer 3 standard.

The IETF's IPP working group is defining directory services to make it easier for end users to find authorized printers on a network. The group also is developing a system for notifying an end user via e-mail when a print job is done or aborted. Other features include remote printer configuration as well as support for accounting, billing and usage reporting.

Because it is based on existing Internet standards, IPP will work with other applications, such as e-mail and directory and wireless services, to provide complete Internet printing solutions.

"IPP is a piece of the infrastructure required for Internet printing, but it isn't everything," says David Kuntz, alliances manager at HP's Internet Imaging and Printing Systems. "With IPP you can get information about a print job or a printer device remotely via the Internet, but other Internet-based technologies will allow print jobs to be moved [around]. We see this as one facet of a whole dynamic of being able to communicate to printers

tion. End users submit a print request using a command in the browser address line that starts with "ipp://" rather than "http://."

## Will it work over firewalls?

One unsolved problem is how IPP will work over firewalls. IPP uses router port 631 rather than port 80 used by HTTP to make it easier for firewall vendors to distinguish IPP traffic. The IETF's IPP working group is planning an interoperability demonstration in October that will include several IPP-compliant firewall packages.

IPP will be supported in operating systems, print servers and printers. More than 50 products already support an experimental 1.0 Version of IPP. Products supporting the 1.1 Version of IPP that was blessed by the IETF are due out later this year.

On the operating-system side, Windows 2000 workstation and print server offer basic support for IPP 1.0 except for the "print-by-reference" feature, which allows an end user to send a URL to the printer and the printer will automatically download the document and

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**FOUNDRY**  
NETWORKS



## Cisco Fellow,

Continued from page 1

David Oran has been a Cisco Fellow since 1999. His specialty is voice over IP (VoIP). I recently stopped by his house — he telecommutes from Massachusetts — for a long chat about VoIP developments, where the demand for the technology is coming from and where it is going.

Oran started with Cisco in 1996 after a long career with Digital Equipment where, among other achievements, he designed the first DECnet SNA gateway.

He had just finished a wireless net product for Digital when the Cisco job offer came. Oran could have remained with wireless but instead decided to apply his IP expertise to voice. He helped start a Cisco VoIP group in March 1996 with a team of experts that had backgrounds in everything from physics to telephony signaling and the Bell System.

Although other Cisco groups were exploring voice over ATM and other technologies, Oran's group was the only one focusing on VoIP.

Cisco shipped its first VoIP product in 1998, a telephone port adapter for the 3600 line of modular routers. Voice sales today represent hundreds of millions of dollars in revenue per year.

Although that pales compared to Cisco's overall revenue (\$4.92 billion last quarter), it is remarkable given Cisco's data heritage.

How does a voice guy get heard in a data organization?

Cisco is essentially divided into enterprise and service provider groups, under which business units are mostly aligned with product lines.

Voice, however, isn't a business unit. "We didn't want to get pigeonholed," Oran says. "We wanted to offer voice across product lines."

Looking back, that was a smart move. Oran says Cisco offers voice on 80% of the company's products, meaning Cisco can get in the voice door by selling add-ons to customers' existing data gear.

## Why now?

The industry has been talking about convergence for 15 years, if not longer. What makes the timing right now?

"It's not convergence or even integration," Oran says. "It's conversion. IP became ubiquitous. Voice just became an application."

But a host of other factors is helping, among them:

- Digital Signal Processors (DSP) are now on the same cost curve as microprocessors. In the mid-1990s chip manufacturers started making DSPs in the fabrication plants used for microprocessors and costs plummeted. Up to that point the cost per MIP between DSPs and microprocessors was very different. "Suddenly voice processing became economical," Oran says.

- Around 1994 people stopped talking about other protocols, Oran says. Before that, every time you developed anything you had to start by thinking about which protocol you wanted to use.

- Fiber has effectively made backbone bandwidth free. So, even though it is more expensive in terms of bandwidth to carry voice over IP than a traditional TDM architecture, it doesn't matter any more. "They've had 100



PHOTO: STELLA JOHNSON

years, which Oran says are out of whack. "There is tons of economic distortion in the voice system," he says.

That leads to opportunity, especially internationally. He knows of one import/export company that did a lot of international calling. The firm put in some VoIP gear and realized a return on investment within 25 days, he says.

All of these factors have set the stage for VoIP adoption, which will take place in different ways in different organizations, Oran says.

## Adoption expectations

The primary reason VoIP is brought into companies is to bypass toll charges, he says. After only three years, the Cisco device lets customers run VoIP traffic over data lines linking corporate locations, which is a \$100 million business.

Oran says companies will adopt VoIP in the manner they adopt everything else. "What gets new technology into the enterprise is cost savings. And what drives its expansion is new applications."

One of those new applications is what Oran calls "high-touch customer interaction." The idea is to engage the entire organization in customer contact. If the support person is on the move, for example, VoIP-powered networks can find him and forward the call and data required to satisfy the problem.

Another VoIP project that is just over the horizon is Web conferencing, which Oran thinks will become huge in

the next 12 months.

Today, setting up voice or multimedia conferences is complex, expensive and service-oriented. "Using VoIP and doing it on the Web will make it self-service, easy to use and cheap," he says.

Although the existing corporate voice infrastructure won't outright disappear as

me/follow me server. And third-party Web companies will package these up and market services. The package is a marketing bundle, not a technical bundle. It's the Web all over again... the disintermediation of telephony."

Oran says that is still 10 years away, but he believes the trend will become obvious in four years. "That doesn't mean 50% market penetration. The writing is always visible on the wall long before that. You might see 50% penetration in six years," he says.

Besides survival, Oran says the carriers are motivated by their individual situations. Companies such as Qwest Communications and Level 3 Communications are trying to divert bits onto their nets in as large chunks as possible because they have an advantage over older long-haul carriers — even though their IP

**■ "They've had 100 years to perfect TDM. But data rates are growing so fast that in a few years you'll have to look hard to find the voice. It will just be squeezed in between the data."**

David Oran, Cisco Fellow

corporations embrace VoIP, Oran says the PBX will fade as telephones are replaced by Internet appliances.

"End users will want Internet appliances that happen to have voice support. Some will look like telephones, others won't. The PBX will simply atrophy with time," he says.

Internet appliances won't, Oran estimates, include PCs acting as telephones. "If that was going to happen, it would have happened a long time ago," he says. People aren't interested in using the PC that way, according to Oran.

## Service providers

The forces motivating carrier adoption of VoIP are more urgent.

"The thing that phone companies should be most afraid of is the need for phone companies going away," Oran says. "In the new world, you'll have Joe's messaging server and Bob's find

architectures are similar, their overhead is lower.

A driver for more established carriers is moving into new markets. AT&T is getting into cable, for example. As Oran understands it, AT&T will ultimately run voice over its CATV facilities using VoIP.

A VoIP motivator for carriers is that some brash upstart will use the technology to change the rules and walk away with the market.

As you might expect, Oran is confident about VoIP's future. He predicts the first world will replace the circuit-switched architecture driving the PSTN with packet technology by 2010. "That's the trajectory we're on."

Whether he is right or not, it's hard not to get caught up in his enthusiasm. ■



years to perfect TDM. But data rates are growing so fast that in a few years you'll have to look hard to find the voice. It will just be squeezed in between the data."

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Unisys and the Royal and Ancient Golf Club of St. Andrews have forged a unique partnership to develop the most sophisticated and capable of computerized scoring information systems.

# A FINE Match

ARGUABLY THE MOST traditional and precise of all sports, golf has changed remarkably little in its 600-year history. The object of the game remains to hit a little ball up to a quarter of a mile past, around, and over numerous obstacles and hazards, and have it roll into a small hole dug into the earth.

The very essence of this tradition and precision unfolds at the oldest of golf championships, the British Open, where the world's finest golfers tee off this summer from the exact same turf at St. Andrews in Scotland where golfballs first took flight in the early 1400s.

While thousands of spectators jam the wind-swept links to watch the golf masters at work, millions more around the world follow the action on television and, increasingly, on the Web. And owing to another partnership steeped in a tradition of excellence and precision, all these fans can track the scores and standings of their favorite golfers within seconds of a ball dropping into any of the notorious holes at St. Andrews' Old Course.



The Royal and Ancient Golf Club



"They've given us and the media a simple-to-use system that allows users to extract very complex information very quickly. I know what they are doing is anything but simple, yet they make it look easy."

Stewart McDougall, press officer of The Open Golf Championship

With more than 20 years together, Unisys and the Royal and Ancient Golf Club of St. Andrews have forged a unique partnership to develop the most sophisticated and capable of computerized scoring information systems. With scoring updates sent in

real time to major media outlets for processing in a variety of applications, the scoring system is an expression of leading-edge, mission-critical, fault-tolerant computing in support of tradition and individual excellence.

"This will be our 21st year with the

Royal and Ancient Golf Club," says David Fox, manager of the Global Sports Marketing Program for Unisys, "and we are providing scoring data and data-crunching applications to major media including the BBC, ABC, ESPN, Japan's TV Ashai, and BBC Radio. In addition to the British Open, Unisys provides the scoring information system for a second Grand Slam golf event, the U.S. Open, as well as for the U.S. Women's Open, the U.S. Amateur, all the European PGA Tour events, the Australian Tour, and the World Amateur Championship, making Unisys the world's premier enterprise solution provider for major golf events."

"Unisys adds huge value to us and to our work," notes Barbara Slater, executive producer with the British Broadcasting Corporation (BBC), who has covered The Open since 1984. The BBC is among the largest users of Unisys scoring data. "They have always worked to understand what we are trying to do. It's a real partnership we have with them and, as a result, we've progressed together."

#### BEHIND THE CURTAIN

Slater's staff and some 400 other journalists and media broadcasters spend much of their time at the Media Center, run by "event CIO" Stewart McDougall, press officer of The Open Golf Championship. Echoing Slater's experience working with Unisys, McDougall says, "They've given us and the media a simple-to-use system that allows users to extract very complex information very quickly. I know what they are doing is anything but simple, yet they make it look easy."

The scoring system is a master-

## Bringing You The Wind

Television production teams constantly strive to enhance their viewers' enjoyment and understanding of sports events. That often means attempting to show the viewers just what the players are experiencing. In championship golf, shifting wind conditions have spelled boom and bust for countless golfers.

Until recently, swirling tree branches and the muffled sound of gusts beating against microphones were the only clues the television audience had for gauging wind conditions on the course.

Thus, a couple years ago, ABC Sports presented Unisys with a challenge: Develop technology to allow TV viewers to "see" the wind.

The result is the "wind stick," a fully portable, telescoping telemetry station, extendable to 18 feet and consisting of a precision anemometer and a wind vane. Into a lunchbox-sized, weatherproof case, Unisys packaged a micro-controller, radio modem, battery, and custom-designed interface card that connects the instruments to the components, while providing a simple operator interface.

Running custom software developed by Unisys, the micro-controller samples the instruments, calculates wind speed and direction, and feeds the data via modem to a base-station PC.

Other Unisys software merges the wind telemetry data with graphics software, producing, at the director's command, the now-common ABC sports graphic. (The BBC has also begun using this innovative system.) The portable nature of the wind stick allows operators to move with a group of golfers and to sample fickle winds at different points of the hole, such as at the tee or at an elevated green.



The wind stick dramatizes gusts on the greens.



work of ingenuity that is flexible enough to evolve with the rapidly changing needs of the media and of the golf-watching public. For example, in the United Kingdom, the majority of BBC television viewers of

system gathers throughout The Open?

The action starts right at greenside. The moment a player's putt drops in the hole, a greenside scorer enters the play data into a handheld terminal. The information is instantly radioed to the Unisys data-center-on-wheels on the course grounds. Servers there immediately enter the score and feed the information to the hundreds of media at work in the Media Center and in the separate booths and trailers of the BBC, ABC, and others. Servers also instantly update various Web sites, including The Open's own site, [www.opengolf.com](http://www.opengolf.com).

All this occurs by the time the golfer has tipped his hat to the crowd and stooped over to retrieve his ball.

Unisys recognized early on the heady challenge of building a fault-tolerant system, given

the temporary and exposed nature of the system components. The system is set up over 10 days and dismantled in just one. During the event, thousands of spectators troop over some five miles of cable, while blithely knocking against phone conduits and other network equipment.

"So we use the network in place as little as possible, using it primarily to move scoring changes to the hundreds of terminals we feed," observes Jeff Schroeder, Unisys technical manager. "Applications are on the PCs themselves, which continue to function even if the flow of scoring updates is disrupted temporarily. So even if the network is down, you don't present a blank screen and look like you are down."

This guaranteed uptime of the

## Shoulders Of Giants

Mission-critical information systems must carry on their vital work no matter what the environmental obstacles. The British Open has provided its own set of unique, if not amusing, challenges to keeping the Unisys scoring information system up and running.

Take, for example, the time a beer truck pulled up for a delivery not far from the Media Center. The driver lowered the lorry's lift gate directly across several cables, severing them completely. Fortunately, the fully-distributed nature of the Unisys architecture allowed the workstations to continue processing the most current scoring information available until the lines could be reconnected.

Then there was the time some journalists in the Media Center noticed intermittent, rhythmic disruptions on their screens. Troubleshooters soon located the problem source: a nervous golfer waiting his turn to play. It seems he was tapping his spiked shoe against a cable underfoot.

With 20 years of Open experience under its belt and 15 engineers, software experts and other staff on site, Unisys manages to keep the scoring system up and running through every common and quirky obstacle, notes Jeff Schroeder, technical manager of sports marketing at Unisys.

"Knowing all that can go wrong when so much of the system is put up only temporarily, we make sure we have strong performance-monitoring systems in place," Schroeder says. "Quite often we are able to detect and fix a problem before anybody is aware anything is wrong in the first place."



Laying the cables which carry data to and from the Media Center

The Open are not golfers.

"That means our broadcasts have an education and explanation role to fill," says BBC's Slater. "We want to increase their enjoyment, and we work with Unisys on ways to do just that." One such innovation is tracking data on the precise distance a golfer's ball is from the hole on any given stroke—data that can be presented to viewers graphically in a number of ways.

### FROM PUTTS TO DATA

Just how do these and other data get from the course to the myriad applications the media use to create entertaining coverage? And what are some of the most common applications Unisys has developed to process and interpret the scoring information its



nodes on the network, regardless of what happens to the network itself, is owed to a proprietary and highly resilient network protocol Unisys built for its scoring system. Each of the terminals and servers in the data center forms one piece of a truly distributed system running a custom-built database. This way, the sometimes-finicky network is hidden from the performance picture.

In addition, the Unisys team shuns ultra-modern network connections such as fiber optics. The reason? "We can get any phone person in the

country to fix a standard wire line, but that just isn't the case with a piece of optical cable," Schroeder says. "In this way, we keep our network connections running over what, in this case, is the simplest and most robust technology available."

#### FROM DATA TO ENTERTAINMENT

With current scoring information safely delivered to hundreds of terminals and workstations on site, the Unisys-engineered applications kick in. Whether it is a television station in Stockholm that wants a scoring and

position update of key Swedish players, or a producer at ESPN looking for scoring data on the toughest holes, the information is readily available from the menu-driven system.

"It's amazing how easy they've made it to get so much information presented so many different ways," says McDougall. "The system makes the media so much better at doing its job."

Included among the many ways Unisys applications present raw scoring data are:

■ A detailed leader board showing

## Fast Facts:

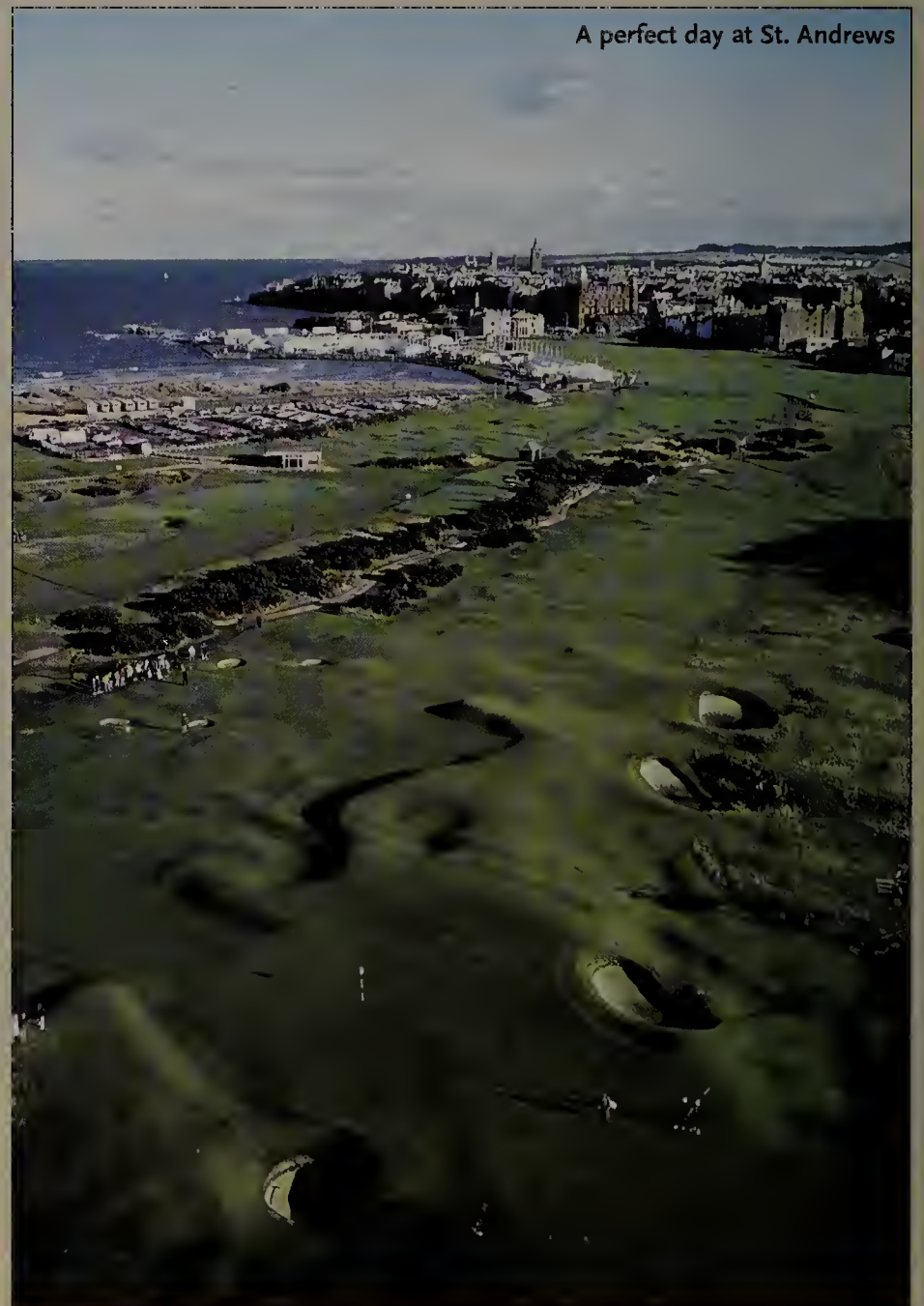
■ From simple beginnings in the early 1400s, golf became so popular at St. Andrews that King James II banned the game in 1457, feeling it distracted young men from archery practice. The ban was repealed in 1502 by James IV, himself an avid golfer.

■ The first Open Championship was played on the Old Course in 1873. In this first year of the New Millennium, The Open will be played for the 26th time at St. Andrews.

■ The Old Course features a daunting 112 sand traps. The faces of the two most treacherous traps were built using railroad sleeper cars sunk into a concrete base beneath the wall of the actual playing turf, which is 10 feet above where a golfer must try to blast his ball.

■ The largest green measures more than 1.5 acres.

■ There are six golf courses comprising the St. Andrews Links. All of them, including the famed Old Course, are open to the public, reflecting the intentions of King David, who gave the links land as common land for townspeople in 1123.



A perfect day at St. Andrews



UNISYS Benson & Hedges International Open 6:04											
Course Scoring Summary - All Rounds											
HOLE	YARDS	PAR	AVERAGE	RANK**	EAGLES	BIRDIES	PARS	BOGEYS	DOUBLE BOGEYS	OTHER	
1	411	4	4.284	6	0	36	274	129	12	4	
2	379	4	4.171	10	0	62	283	110	10	0	
3	636	5	4.775	17	0	159	225	66	7	1	
4	442	4	4.364	2	0	37	245	149	23	1	
5	408	4	4.104	14	0	61	293	92	6	0	
6	395	4	4.291	5	0	48	254	128	20	4	
7	177	3	3.128	12	0	50	311	82	6	3	
8	428	4	4.236	7	1	56	264	107	21	5	
9	433	4	4.328	4	0	47	246	127	33	1	
Out	3611	36	37.672	9	548	2395	979	142	19		
10	311	4	3.919	16	0	117	268	42	21	2	
11	419	4	4.200	9	0	47	286	166	12	2	
12	208	3	3.343	3	0	40	273	160	34	6	
13	384	4	4.152	11	0	91	293	76	16	7	
14	190	3	3.127	13	0	82	299	98	6	0	
15	545	5	4.673	18	11	183	210	40	1	2	
16	413	4	4.229	0	1	41	288	108	16	3	
17	664	6	4.993	15	3	100	258	82	9	1	
18	473	4	4.734	1	0	21	182	153	79	13	
In	3507	36	37.370	20	662	2367	816	192	38		
Total	7118	72	78.042	29	1210	4762	1795	334	57		
* Ranked from 1 (Most Difficult) to 18 (Least Difficult)											
Round One	Round Two	Round Three	Round Four	All Rounds	Course Stats	Course Map	Hole Info	Course & Hole Info	Print Report	Menu	
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12

The Unisys course summary

scores on individual holes for the 150+ golfers in the tournament;

- Statistical leader boards detailing data such as the number of fairways golfers hit off the tee, the average or maximum drive lengths on specified holes, greens reached in regulation (by the second shot on a par 4, the third on a par 5), total putts taken by individuals, or the average putts of entire groups of golfers;

- A group-locator allowing the media to track the status of specific pairs of golfers on the course;

- Scoring distribution graphs showing the numbers and identities of golfers playing at par or at any number of strokes above or below par;

- Golfer pairings by tee time, alphabetically, or by nationality;

- A "cut projection" tote that provides highly accurate forecasts of which players on the course are likely to score well enough to continue playing on the last two days of the tournament, and which are destined for an early shower.

"It's usually a matter of one click and, just like that, we've got the information we want," observes Slater. "The screens are clean and easy to read. Their pages are TV-friendly. It's

just great stuff."

Working with the media clients and the Royal and Ancient Golf Club, Unisys continues to evolve the scoring system with an eye toward incorporating leading-edge technologies. Slater notes that the BBC is mulling the use of virtual reality technology that will visually place TV

viewers in an animated, real-time setting faced by a particular golfer in a specific situation on the course. The handheld greenside terminals are destined to be replaced by intelligent palm-top devices that will leverage that intelligence, as well as cellular connectivity, to speed match



The British Open staff update a leader board as the crowds watch on.

updates to the media and to the world's viewers.

"While respecting our traditions, Unisys has done so much to pioneer the speedy delivery of Open information throughout the world," says Duncan Weir, golf development secretary at the Royal and Ancient. "We certainly plan to continue our long relationship with them."



Custom Publishing

## Old & New

Ask any golfer worth his weight in bunker sand why golf courses have 18 holes. He'll tell you it's because that's how many holes there are at the Old Course at St. Andrews in Scotland. Actually, there were 22 holes originally. In 1764, when golf at the course entered its 350th year, these were reduced to 18 holes.

Unlike any other championship course in the world, the Old Course, with its undulating fairways, hellacious sand traps, and double (two-holed) greens yielding putts as long as 100 yards, was not designed by an architect. Rather, it evolved with tradition and time over six centuries of play.

"We deeply respect tradition here at St. Andrews and certainly at The Open, which is the oldest major golf championship and the only one played outside the U.S.," notes Duncan Weir, golf development secretary at the Royal and Ancient Golf Club of St. Andrews. "But at the same time, we've had to be at the forefront of technological advancement over the years. At the base of that has been our relationship with Unisys. Unisys is among a very small number of companies we call official suppliers—our most trusted companies with whom we've had long-term relationships and who provide an essential service."

The relationship has flourished since the earliest days when Unisys developed the first computerized scoring system 20 years ago. "Unisys' quality and delivery of service is first-class, no doubt about that," Weir concludes. "They are constantly working with us to try to improve that service."



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# Infrastructure

**TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage**

## Briefs

**Brocade Communications** last week introduced several enhancements to its switch operating system that will let administrators monitor their Fibre Channel switches and improve communications of their storage-area networks (SAN). Fabric Watch, an optional component of Fabric OS, lets a storage administrator monitor the health of the Fibre Channel SAN. Fabric OS is the operating system for Brocade SilkWorm switches. The package lets customers set thresholds for out-of-the-ordinary events and gather information on the error rates of data passed between two switches. Fabric Watch will work with Computer Associates' Unicenter TNG, Tivoli's Management Environment and Hewlett-Packard's OpenView via SNMP alerts. Fabric Watch will be available this month for \$1,000 per SilkWorm switch.

Brocade: [www.brocade.com](http://www.brocade.com)

**Hitachi Data Systems** has launched a new high-end storage array for large and dot-com companies that offers storage capacities of up to 37 terabytes. The Hitachi Freedom Storage Lightning 9900 array uses a switched architecture that supports throughput of 6.4G byte/sec, four to six times faster than the Hitachi 7700E. In September, Hitachi will ship the 9900 with 74G-byte drives running at 10,000 rpms. The 9900 also contains enhanced software features such as Dynamic Optimizer and NanoCopy. Dynamic Optimizer lets systems perform self-tuning and migrates logical volumes to balance the load. NanoCopy was previously only available on main-frame systems but now is available for Windows NT and Unix systems. The Hitachi Freedom Storage Lightning 9900 costs \$600,000 for an array with a terabyte of data.

Hitachi: [www.hds.com](http://www.hds.com)

## Mission Critical powers Linux clusters

BY DENI CONNOR

**M**ission Critical Linux has launched server-clustering software for enterprise environments that need high-availability and downtime protection.

Dubbed Convolo Cluster, the software allows two servers to be clustered in a configuration where both servers are actively operating. Convolo Cluster is platform-independent and will operate on Intel, scalable processor architecture (SPARC), Alpha or million-instructions-per-second servers.

"Our customers have servers used in mission-critical environments," says Kirk Wilson, technical manager for manufacturer Asaca in Golden, Colo. "If a server goes down, there is the possibility that they'll lose as much as 100 terabytes of data. The ability to have multiple servers in a hot-swap failover or clustering environment is critical to data availability."

A Compaq engineer, Moiz Kohari, founded Mission Critical Linux in July 1999. The company has 80 employees and is backed by \$20 million in venture funding from General Atlantic Partners. Its headquarters are in Lowell, Mass.

Convolo Cluster ships with 60 days of

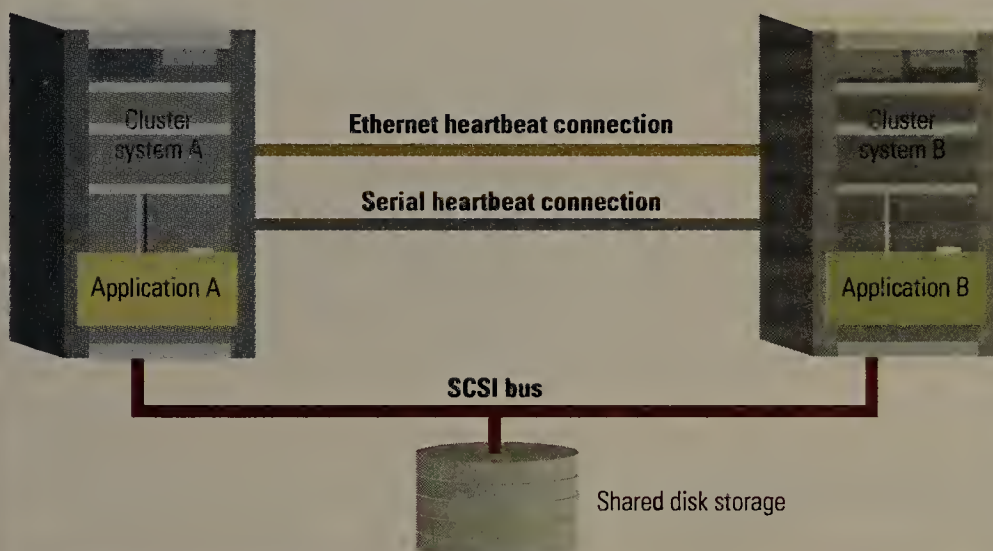
remote, proactive monitoring and includes crash analysis tools that monitor clustered servers, looking for possible problems. The Convolo Cluster can operate on systems running Linux from com-

panies such as Red Hat Software, TurboLinux, VA Linux Systems, Caldera Systems, Mandrake or Debian Linux.

The clustering software supports a See **Mission Critical**, page 22

### A cluster with a mission

With Mission Critical's Convolo Cluster, two active servers are joined with an Ethernet and a serial connection. A heartbeat signal is monitored through each connection to determine if either server is having problems. Should a problem occur, the failover process starts and the other server takes over processing for the failed server.



## Compaq, Celera Genomics map the human genome

BY APRIL JACOBS

Compaq stood tall last week in providing the lion's share of the technology for what may amount to one of the most significant IT projects of 2000: Mapping the human genome.

Harnessing the power of more than 200 AlphaServers and a 70- to 80-terabyte database, scientists were able to map 3.12 billion base pairs of DNA that make up the genetic blueprint and the human body. Scientists hope to use the map to study how chromosomes relate to diseases and the way that metabolism occurs, among other things.

Constructing the sequence was no easy task from an IT standpoint. Celera Genomics began designing and building the massive data center and network in the fall of 1998. The complex infrastructure consists of a combination of specialized database software and hardware — 300 ABI PRISM 3700 automated gene

sequencing machines from PE Biosystems — fed data to Compaq AlphaServers running Tru64 Unix; Intel-based workstations linked to servers running Windows NT; and a Gigabit Ethernet network with more than 200 miles of fiber and 200 miles of 10Base-T copper cabling to tie it together.

Celera also configured its network of AlphaServer systems so they could process as much data as possible by using Platform Computing's load sharing facility software.

One of the reasons that the infrastructure used in the project was so massive was that scientists opted to use the genomes from many people to create a more accurate map.

Many of the workhorse servers doing the job were configured into eight-way clusters. Celera Genomics and Compaq determined the most cost-effective network would be a system-area network — essentially a campus-type network — of

clusters of eight servers running across a Gigabit Ethernet network. While using a single system may have eliminated some setup and configuration issues, distributed clusters were more cost-effective, said Ty Rabe, director of high performance computing solutions at Compaq.

Marshall Peterson, vice president of infrastructure technology at Celera says his company chose Compaq after giving IBM, Compaq, and SGI software code to compile and run on its respective high-end servers. The software code was designed to assemble pieces of the tuberculosis genome. Peterson says it took IBM 87 hours to run what it took Compaq seven hours to run.

Partnering with Compaq was also a result of Compaq's willingness to lend their engineering expertise to the project. "They were willing to help us optimize our code for the architecture," he says.

Compaq: [www.compaq.com](http://www.compaq.com)



# Solid Data speeds access to storage resources

BY DENI CONNOR

**SANTA CLARA** — Solid Data Systems is expected to announce new storage devices for data- and traffic-intensive Web sites, messaging systems and back-end databases this week.

Dubbed the Excellerator 100, 800 and 1000 Ultra SCSI, these drives use solid state disk technology to speed access to data. With solid state disk technology, files that are frequently used are cached on the disk so the server CPU does not become overloaded and files can be accessed quickly.

These frequently used or "hot files" make up less than 5% of the total storage but account for more than 50% of server traffic, experts say.

Solid state disks sit between the server and a RAID subsystem, Just a Bunch of Disks or Fibre Channel array, and they front end files for quick access. Using this technology, performance reading data off disks can improve by 200% to 800%,

the company says.

"Unfortunately, too often the servers that drive the transaction process are unable to perform to their potential because of excessive I/O waits," says David Hill, an analyst with Aberdeen Group in Boston. "Solid Data's Systems Excellerator [products] for file caching may solve the storage-related performance problem."

The Model 100 is a 1 7/8-inch high Ultra SCSI rack-mountable drive that holds from .5G byte to more than 2G

bytes of data. The box features a single disk controller and memory board.

The Model 800 and 800FC are 9-inch-high boxes with a capacity of 10G bytes. They each contain five memory boards capable of storing 2G bytes of data. The 800 and 800FC have a SCSI for direct connection to a server or a Fibre Channel connection for linkage to a Fibre Channel-based storage-area network.

Like the Model 800 and 800FC, the Model 1000 and 1000FC contain Fibre Channel and SCSI connections.

The Model 1000 has 16 memory boards capable of holding 32G bytes of data. The box has larger power supplies and fans than the 800 series models, and is capable of supporting a larger load.

The Model 100 will be available in August for \$12,500 for .5G

byte of data capacity; the Model 800, which will be available this month, starts at \$35,000 for 1G byte of data capacity. The Model 1000 starts at \$56,700 for 1G byte of capacity, scaling to \$270,000 for 16G bytes.

All drives work on Windows NT or Unix networks.

Solid Data: [www.soliddata.com](http://www.soliddata.com)

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## Solid Data's Excellerator 100

**In a new 1 7/8-inch-high rack-mount enclosure, the solid state disk technology is best for transaction-intensive Web sites and databases.**



## Mission Critical, continued from page 21

shared-disk configuration using either SCSI or Fibre Channel, and servers can be connected to each other via Ethernet, serial line, SCSI or Fibre Channel.

Convolo Cluster uses Mission Critical's Kimberlite clustering technology, which the company released under GNU General Public License earlier this month. The source code can be downloaded from Mission Critical's site.

Kimberlite clustering detects when either node leaves the cluster and automatically trigger scripts that perform the

tasks necessary to restart applications on the remaining node. When the server is fixed and rejoins the cluster, applications can be moved back to it.

Convolo Cluster is \$1,000 per server and is available this month. Service after the 60-day free period starts at \$10,000 per server per year.

Mission Critical: [www.missioncritical.com](http://www.missioncritical.com)

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Tolly on Technology . Kevin Tolly

## RUN, DON'T WALK, AWAY FROM THESE TECHNOLOGIES

If you're like many network managers, you take advantage of the brief midsummer respite when colleagues are on vacation to start working on your next budget. Clearly, it's important to spend some quality time mulling over your direction. Just as important, though, is considering which items deserve to be crossed off the list.

During our recent "State of the LAN" Town Meeting tour, *Network World's* John Gallant asked me and our vendor panel this very question. Specifically, which technologies are not worth further investment?

While it's a broad question — and differing circumstances require different responses — it's still instructive to learn what the group would ditch. (Translation: Do not use this column as some kind of "proof positive" that Technology X is dead!)

Roughly in descending order of agreement by the group — which consisted of Alcatel, Extreme

Networks, Foundry Networks, Lucent, Marconi and 3M Corp. — here is the list:

- Shared hubs. Without a switched campus infrastructure, big bandwidth, quality of service and other advanced functions simply do not exist. This is such a basic fact of life that most of us involved in discussing network infrastructure don't mention it anymore. But we should. There are still a lot of shared hubs out there — and a lot of people still buying them. With the price of switched ports so low, shared hubs generally are a bad investment.

- Poor-quality copper cable infrastructure. At low speeds, network traffic can almost run over barbed wire. "Good enough" copper installs were good enough for running 10M bit/sec and probably even Fast Ethernet. The use of poor-quality cable, connectors and installation techniques, though, becomes all-too-apparent at Gigabit speeds. If you think that you'll want

to run Gigabit over copper cabling plant, then you'll have to exercise great care in building out that infrastructure. One of our panelists noted that by avoiding copper altogether, for example, by running fiber to the desktop, you'd have no worries about whether the cabling infrastructure could support Gigabit data rates.

- ATM to the desktop. While a few of the ATM-centric panelists maintained that ATM to the desktop did have a niche role, the majority of the panel (myself included) reiterated that anything but Ethernet simply wasn't strategic. (While token ring can still do the job, the dearth of vendor support — and it's getting dearthier all the time — forces us to acknowledge that it no longer can be deemed "strategic.")

- Proprietary PBX and digital phone technology. While not one panelist suggested that anyone should run back to the office and begin relegating existing gear to the

trash heap, there was strong sentiment that further investment in such gear would not bring the best returns. PBX and phone gear built on open platforms and industry standards would offer the most fertile ground for development of unified messaging and customer relationship management applications. A standards-based approach lets you consider more vendors in your selection process. That competitive environment forces vendors to sharpen their pencils when it comes time to make the final deal. If you are locked into a proprietary PBX/digital phone architecture, there is little incentive for your vendor to do anything but raise prices.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at [ktolly@tolly.com](mailto:ktolly@tolly.com) or [www.tolly.com](http://www.tolly.com).*



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# Intel boosts e-comm performance with NetStructure 7110

BY MARK GRAY

Secure and speedy is a tough combination to get when you are talking about an e-commerce site.

Intel's new NetStructure 7110 eCommerce Accelerator was designed to give your Web site speed — it accelerates Secure Sockets Layer (SSL) transactions — without sacrificing security.

SSL was developed in 1994 to provide the security required for conducting e-commerce, but the price for this security reduced Web server performance.

An SSL connection consists of an SSL handshake followed by cipher negotiation and generation. The next step in an SSL transaction is bulk encryption and decryption of the client request, which is followed by the server response. SSL acceleration removes the SSL handshake, cipher negotiation and generation, and the encryption/decryption burden from the Web server.

## The results

Our tests showed that the NetStructure 7110 — a drop-in, scalable appliance that processes up to 200 secure connections per second — handles the task of removing the SSL overhead burden from the Web server very well. It works by decrypting the

client SSL packet before it reaches the Web server, requiring less CPU processing power from the server. After the request is processed, the packet is re-encrypted by the NetStructure 7110 and sent back to the client.

Our tests demonstrated that the NetStructure 7110 improved the performance of secure transactions by 80% over the baseline configuration.

We created a test harness capable of generating varying amounts of encrypted transactions per second using an HTTP Secure site comprised of three pages, one of which required posting to a form. Our transactions consisted of a user accessing a home page, selecting a link to a secure order entry page, entering customer data and a test credit card number and submitting this information for confirmation.

Both the single and paired NetStructure 7110 configurations we tested achieved more than double the total transactions (see Chart 1) over the traditional Web server environment. When we ran 600 virtual users against the base Web server configuration, approximately 2,000 transactions were processed in five minutes. When we ran 600 virtual users against the single and multiple NetStructure 7110 deployments, approximately 4,200 transactions were processed in five

minutes.

The NetStructure 7110 also showed improvement in average transaction time (see Chart 2), which was represented by the increase of transactions, and the average transaction time was cut by approximately 75%.

For the total transaction count to increase and the average transaction time to decrease, the total number of successful connections per second had to be increased. Our tests showed the number of successful connections increased almost tenfold (see Chart 3). When we ran the tests without the NetStructure 7110, only 10 connections could be processed per second. However, when the NetStructure 7110 devices were installed, approximately 100 connections per second were made.

Our results showed little difference in performance when we added the second NetStructure 7110 unit. This condition may have been a result of the limited size of our test server. We believe that if you are using a larger server containing multiple CPUs, you will see the benefits of the second Intel unit, as the server should be better able to handle the increased throughput realized from the SSL acceleration.

Intel's NetStructure 7110 is supported in an array of Web server environments, including Apache, Microsoft and Netscape. Operating systems supported include multiple Unix flavors and Windows NT.

Another benefit of the NetStructure 7110 is the number of security algorithms currently supported. The algorithms supported are RSA, RC2, RC4, RC5, DSA, Data Encryption Standard, Triple-DES, International Data Encryptions Algorithm, CAST, CAST5, Blowfish, MD5, MDC2, RMD-160, SHA and SHA-1.

The NetStructure 7110 is fully configurable via the Command Line Interface that an administrator can get to the serial port and aux console RS232 port. However, the use of this administrative system See **NetStructure**, page 26



## NetResults

### Intel NetStructure 7110 eCommerce Accelerator

**RATING: 7.90** **COMPANY:** Intel,

www.intel.com **COST:** \$12,995.

**PROS:** Faster SSL processing; scalable, fail safe design for e-commerce security; supports single server or server farm configurations.

**CONS:** Command Line Interface is not standard; requires a hyper terminal via an RS 232 serial connection; is not intuitive and documentation is vague.



	Performance 40%	Features and flexibility 30%	Manageability 20%	Installation and configuration 10%	Total score
NetStructure 7110	9	7	7	8	7.90

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

Chart 1: Total transactions

Both the single and paired NetStructure 7110 configurations we tested achieved more than double the total transactions over the traditional Web server environment.

Transactions (in five minutes)

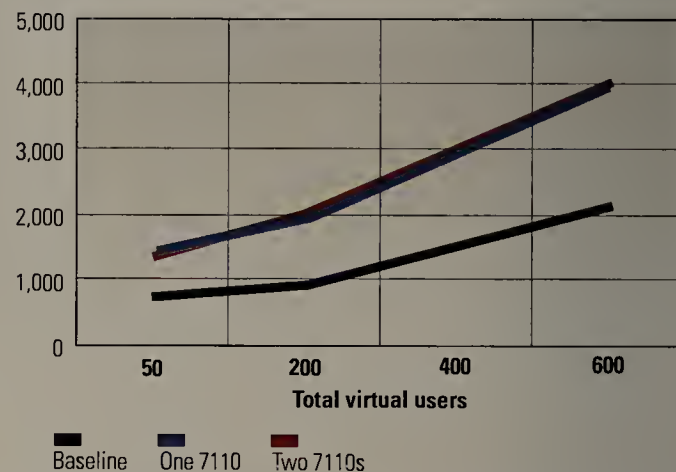


Chart 2: Average transaction times

As represented by the increase of transactions, the average transaction time is cut by approximately 75% when you add a NetStructure 7110 unit to an e-commerce site.

Transaction average (per second)

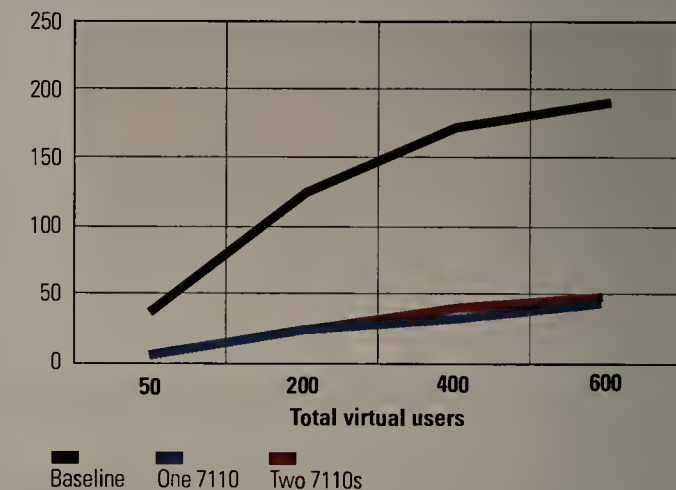
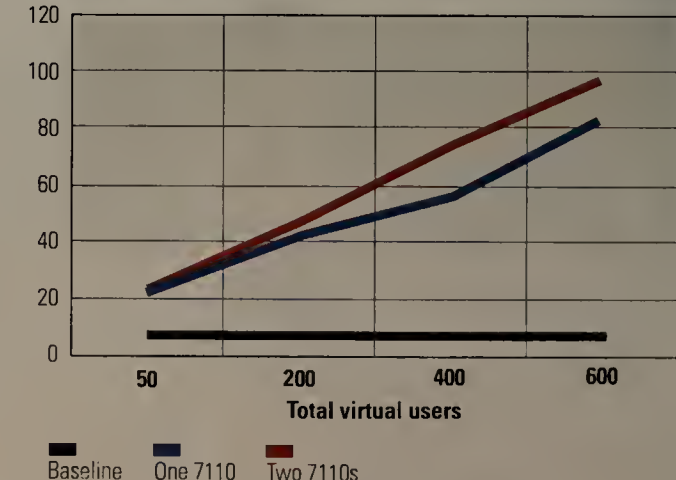


Chart 3: Total successful connections

Our tests showed the number of successful connections increased by almost 100% with the introduction of the NetStructure 7110.

Total successful connections







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**NetStructure,**  
continued from page 25

tem was not adequately documented in the users' guide. Initial setup of certificates and keys require tweaking. We suggest a Java- or Web-enabled user interface would make installa-

tion and configuration easier.

The NetStructure 7110 can be installed in a standard 19-inch rack or can be free-standing on a flat surface. Either installation should allow for unrestricted airflow and ventilation openings. Other considerations are maximum ambient temperatures and

circuit overloading.

A necessary part of the NetStructure 7110 configuration is the use of keys and certificates. There are three ways to obtain them:

- A certificate authority such as VeriSign.
- Using an existing key/

certificate.

• Creating a certificate on the NetStructure 7110.

For testing purposes, the appliance comes with default keys/certificates. However, for production purposes, the certificate should come from a recognized authority.

The NetStructure 7110 supports both auto mapping and manual mapping. Mapping is the process of associating a key identification with a server.

The initial configuration provides an automatic mapping entry for network port 443 and server port 80. A user can manually create mapping entries for individual servers using the "create map" command.

The appliance can be configured into a network in several ways. In the simplest, most common configuration, the NetStructure 7110 box is connected to the network between router and server by plugging in an Ethernet cable. You can also accelerate multiple Web servers with a 7110 NetStructure machine. In this configuration, the NetStructure 7110 is located between a router and hub that sits in front of your Web server farm.

The third way to deploy these appliances is to cascade multiple NetStructure 7110 units between the router and the Web server for additional performance and availability. By enabling the "set spill enable" command of the first 7110, the next 7110 will handle overflow from the first and so on with multiple 7110 boxes. In all cases, the NetStructure 7110 boxes have no IP address; therefore it's transparent to the server and the router except for the lower communication layer.

Web sites running SSL have traditionally had performance issues forcing companies to throw more expensive infrastructure resources into the site to ensure reasonable response time for the end user. Implementing Intel's NetStructure 7110 on your site would ensure a significant improvement in performance without sacrificing security.

*Gray is a software test engineer with SysTest Labs, LLC in Denver. He has more than 11 years professional experience with quality assurance/quality control project work including requirement development, requirement analysis, test planning, automated test design/development, database development and application development. In addition, he has five years of experience as a network/system administrator for both PC and Unix environments.*

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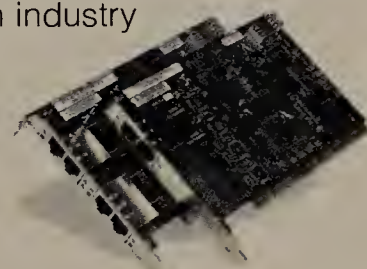
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# Managing the storage monolith

BY DENI CONNOR

A slew of software is coming to market that helps IT professionals manage the increasing amounts of storage they have attached to Windows NT, NetWare, Unix and mainframe servers.

That news comes none too soon because according to Strategic Research, a consultancy in Santa Barbara, Calif., storage capacity per company is growing by 44% per year. That means that by 2003, a typical large company could be managing about 200G bytes of network storage, in addition to their enterprise network and systems management duties.

But how do you know which packages to use? Dave Hill, storage analyst for Aberdeen Group in Boston, divides storage management into four classes: data protection, data placement, storage administration and storage resource management.

"If you are going to manage the storage-area network you need all this software. And you want to get it from a company that is hardware-neutral and will manage all servers and storage devices," Hill says.

IT managers generally do well protecting the data on their networks. They back up the network daily, protect tapes against damage and even vault data to remote sites to provide for disaster recovery.

Many companies, such as EMC and Veritas, make this task easier by offering snapshot back-up tools that take a point-in-time copy of data so IT staffs have a record of the state of the network at any time. If problems occur, they can recover data or files from the time period they want. Snapshot backups eliminate the worries of having a decreasing amount of time, called the back-up window, available to back up data.

Other data protection tools include open file managers, which let customers ignore the back-up window entirely. These tools assume that no window exists and files are being accessed continually. St. Bernard Software and Computer Associates make software that backs up open files. Specialized tools are also available for backing up and recovering individual messages and transactions from e-mail message stores and databases. Among the vendors that sell such tools are CommVault and OTG Software.

## Making the most out of storage

With the large numbers of servers and storage arrays currently employed, analysts say it is difficult to determine if storage is being used optimally. Some servers may have more storage available than they can use, others need storage immediately. A Unix server may be overloaded, while an NT server with gobs of available storage sits idle.

Now that NT and Unix servers can share data located on the same storage array through a tech-

## STORAGE MANAGEMENT

*Management packages abound — but which ones do you choose?*

### Classifying Storage Management

**Aberdeen Group divides storage management into four groups:**

**Data placement** — Software that physically, logically and virtually moves and places data on networked storage media and retrieves it. For example, data placement software creates storage pools that allow more effective use of storage.

**Data protection** — Back-up, recovery and synchronous remote mirroring software. Data protection software has always been vital to storage quality. Increasing volume and value of content serves to emphasize that value as the need for 24-7 global availability increases.

**Storage administration** — Software that handles basic hardware configuration and security-related tasks.

**Storage resource management** — Software responsible for managing storage assets. Storage assets include physical assets, such as disk storage systems, tape libraries, and storage-area network communications gear.

nique called zoning, or partitioning, software is starting to appear that lets IT managers analyze their data storage distribution from a single console, adjusting it manually or automatically as required.

DataCore Software has created software that lets an IT manager create a "virtual data pool" from a variety of storage arrays that can be assigned to any Unix, NT, NetWare or Linux server. Take 5G bytes from Drive A and give it to an NT server; take 10G bytes from Drive A, give it to a Linux server; and give the remaining 21G bytes to the Solaris server. Taking data residing on any storage device on the network and making it available to any server is a holy grail that many users want but few have been able to achieve because of technological limitations.

Richard Boyle, vice president of Chase Global Private Banking in New York, is using pooling. "Prior to having any Fibre Channel or pooling products, we just threw more disks into a server," he says. "With pooling you can add storage as you need it, and you are in a far better position to predict how much storage you need. Prior to pooling, you would buy another server and spend a minimum of three

days of work dividing up the users and bringing it online."

Once IT managers have consolidated their storage and backed it up, their attention should turn to what Aberdeen's Hill calls storage administration — software that handles hardware configuration and controls access to it. Most Fibre Channel vendors, including Brocade, Gadzoox and Vixel, offer software that installs, configures and controls access for their devices. Only a few vendors, such as Vixel, offer device management that is independent of the device they manufacture.

Another area of storage management that network managers are concerned about is storage resource management (SRM), characterized by software from HighGround Systems. SRM lets storage administrators manage the physical as well as the logical storage assets — features such as disk capacity, files, volumes and utilization, and tasks such as asset management.

Within SRM is the capability to monitor events on the storage subsystem, correct them and set policies to avoid them in the future — capabilities that have been tracked on network devices for some time. According to Hill, SRM should fit alongside application and network management and database administration.

## The art of zoning

Storage vendors have considered the data network to be different from the network infrastructure, and because of its differences they have some new ways to manage it. They've incorporated zoning to allow access to the disk by server operating systems.

Until recently, however, vendors paid little attention to network and systems management techniques, says Steve Duplessie, an analyst with Enterprise Storage Group in Milford, Mass. They've forced users to manage storage with new tools instead of through a single, consolidated console with a view of the data as well as network and systems infrastructure.

Gadzoox was one of the first vendors to use a directory-enabled technology, common in Novell network management products, to manage its storage routers. Brocade recently introduced software called Fabric Watch that relies on SNMP to collect statistics about devices and feed them to consoles such as BMC's Patrol for analysis and reporting.

Users want storage management that ties into the rest of their jobs — managing the network infrastructure — so they can view their entire systems, data and otherwise, from a single console. At least that's what many users say.

"We have IBM Simplicity's storage management for the company's NetFinity server-attached storage," Chase Global Private Banking's Boyle says. "Wouldn't it be nice if we could report those storage functions up through Tivoli? Both [Tivoli and DataCore] have promised that they will do that." ■





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# Carriers & ISPs

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## Briefs

Forget about Bell Atlantic. And GTE, too. The two have officially merged, and the new entity is Verizon Communications (pronounced like horizon). The merger gives the company one of the richest local exchange markets in the world and a nationwide long-distance network, a combination that sets it up to be one of the super-carriers that will emerge from the current telecommunications competitive turmoil.

www.bell-atl.com; www.gte.com

Teligent and the second largest telecommunications service provider in Germany, Mannesmann Arcor AG, recently announced a joint venture called ArcTel. ArcTel will offer voice, data and Internet access services to business customers in Germany as well as broadband fixed wireless services in 44 markets by November. ArcTel, through Teligent and Mannesmann, already has 198 wireless licenses in the 3.5-GHz and 26-GHz spectrums. Teligent has been expanding beyond the U.S. this year with rollouts in Argentina, Hong Kong, Spain and France.

www.teligent.com; www.arcor.de

WinStar Communications, one of Teligent's fixed wireless service provider rivals, is also expanding overseas. Last week WinStar announced it has been granted a fixed wireless license in Peru. It will build a fixed wireless network that uses the 200-MHz spectrum in Lima, with services due in mid-2001. WinStar is also expanding outside the U.S. WinStar has been issued spectrum licenses in Tokyo, London and Buenos Aires and already offers services in 12 markets in Europe, Asia and South America.

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## SBC can pretest your network design

BY TIM GREENE

SAN ANTONIO, TEXAS — SBC Communications has a new early-warning tool that lets it pound on virtual copies of customer networks to find out how much their real networks can stand before they break.

Called Enterprise Designer, the software tool also lets SBC double-check new networks or network segments to see if they can handle intended loads. Enterprise Designer will be used by SBC to simulate increasing loads on existing networks to help network executives decide when to increase capacity, says Howard Owens, an SBC engineering processes manager.

Enterprise Designer is the marriage of two commercially available software packages: IT Decision Guru from Opnet Technologies and a suite of software offerings from Netformx. SBC design engineers nationwide will be using the product by the end of the month.

The software products help systems engineers do their jobs faster with fewer errors, says Michael McCarthy, a systems

### SBC's enterprise design tool

**Enterprise Designer software lets SBC design and test corporate networks based on software models. Among the features of the new software:**

- Reviews existing networks based on SNMP data.
- Lets designers specify configuration of devices in the network.
- Confirms that the network as designed can handle the projected load.
- Enables testing of network with hypothetical loads to plan future capacity.
- Writes reports about how the network will respond to changes in traffic flow.

engineer for Cisco who works with sales teams to design customer networks. He says the Netformx software draws on a database of information about specific products to guide the design.

"It lets you build a bill of materials for equipment you might not be as familiar with and makes sure you don't violate configuration rules," McCarthy says. "If you design a network without this, you

inevitably wind up at a customer site to build the network and find you don't have enough ports in a certain area."

The Netformx software maps existing networks using autodiscovery. A PC running the software attaches to the customer network and captures SNMP data to review the network. Designers can then make changes and additions.

Using a database of information about vendor products, Enterprise Designer lets engineers specify how each device on the network should be configured. It then confirms that the devices specified can support the proposed network.

Opnet's software lets engineers load a computer model of a proposed network with traffic. The traffic patterns can be based on traffic statistics from an existing network or hypothetical traffic based on projections.

The virtual load tests generate reports that customers can use to decide whether to go ahead with network upgrades and to determine which segments need attention first. SBC customized Opnet's and Netformx's software so they can share files. ■

## Report urges action to conserve phone numbers

*Consulting firm says mileage-based pricing formulas are outdated.*

BY DAVID ROHDE

WASHINGTON, D.C. — A nearly century-old practice of local telephone companies is threatening a crisis in the telephone number system. That's the claim of a new report published by Boston consulting firm Economics and Technology, Inc. (ETI).

At issue is the local telephone companies' practice of subdividing regional calling areas into rate centers. The purpose of rate centers is to calculate the mileage of a call to come up with a toll charge.

When a user makes a call to a location that is not close enough to be part of the user's free local calling area but is not far enough to be handed off to a long-distance carrier, the telco usually will calculate the miles between the two parties' rate centers. The mileage determines the rate per minute.

The problem, says ETI's report, is this system doesn't take into account new

local carriers. Each new carrier that enters a market must request a block of phone numbers for each rate center it wants to serve to ensure full connectivity with the incumbent carrier. That can lead to a tremendous waste of numbers because the current minimum block is 10,000.

For example, the Boston metropolitan area has 47 rate centers. A new carrier in Boston must start with 470,000 numbers if it wants to solicit customers in the city and suburbs.

ETI says mileage-based pricing — the whole rationale for rate centers — is outdated. Long-distance carriers don't use it anymore for calls across the country, but local carriers paradoxically still do for short-distance toll calls. "Incumbent local exchange carriers are extremely resistant to any measure that would require them to forego this profitable source of revenue," says ETI.

ETI urges regulators to force local carriers to abandon rate centers and establish

a single toll charge — or expand their free calling areas while slightly increasing the monthly fee for a phone line. In March the Federal Communications Commission took a more limited step to slow the pace of new area codes: mandating software changes to let carriers request 1,000 numbers at a time. ■

www.nwfusion.com

### SEARCHING FOR NUMBERS

Read more about the phone number shortage in the Economics and Technology, Inc. report "Where have all the numbers gone?"







Eye on the carriers . David Rohde

## HOW BERNIE'S ATTORNEYS BLEW THE MERGER

**T**here's an old story about a lawyer whose client was charged with breaking into a house and stealing a TV. The defense? His client was out of

town the night of the crime. Even if he was in town, it was his bowling night. Even if his bowling friends say he never showed up, no one saw him

at the crime scene. Even if a witness did see him carting off the TV, he later returned it in perfect condition.

This mentality was on classic display in WorldCom's failed attempt to take over Sprint. What WorldCom's lawyers didn't count on was Justice Department Antitrust Chief Joel Klein's refusal to be bamboozled.

First WorldCom claimed there was no such thing as the long-distance market because everyone is entering everyone else's market. Then, faced with the obvious ongoing split between local and long-distance, they argued that so much broadband capacity is coming on board that it doesn't matter how many long-distance carriers there are. Then, faced with the reality that most new capacity has yet to be lit, they argued there are still hundreds of long-distance carriers.

Finally, confronted with the fact that most "carriers" are wholesalers or resellers with no real customer service capability, WorldCom argued users still enjoy a substantial choice of national service providers.

This is where they really fouled up. Overreaching one last time, WorldCom gave regulators a list of 11 carriers that do national voice and data contracts. But the list jumbled together true enterprise competitors with carrier's carriers such as Williams and Level 3 Communications. The only common link was the 11 had issued press releases that mentioned enough different types of voice and data offerings.

Here's what WorldCom should have said: "We admit the market is pretty concentrated, but there is a second tier of carriers gunning for our total business — right now it's Qwest, Cable & Wireless and Global Crossing — plus a few nibblers." Then it should have tied its merger to the entry of Bell companies into long-distance and actually become an advocate of such an opening.

Then WorldCom should have impressed Klein with its consumer sensitivity. When AT&T raised basic consumer telephony rates to a ridiculous 29 cents per minute, WorldCom should have blasted AT&T. But they couldn't because WorldCom had recently raised its own MCI basic rates. When Qwest got hit with a \$2.1 million slamming fine, WorldCom should have reacted in indignation. But they couldn't because shortly thereafter WorldCom got hit with a \$3.5 million slamming penalty.

Was there no WorldCom lawyer with the guts to tell Bernie Ebbers that a few extra cents per minute and a few more creepy telemarketing sales weren't worth risking a \$115 billion merger? Could no one tell him that Klein doesn't like to be treated like a fool?

If not, maybe Bill Gates can give Bernie some of his notes.

*Robde is managing editor of The Edge section of Network World. He can be reached at [drohde@nwu.com](mailto:drohde@nwu.com).*

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# Enterprise Applications

Intranets, Messaging/Groupware, E-commerce,  
Security, Network Management, Directories



## Briefs

The fledgling management service provider (MSP) vendor community has formed the MSP Association to define and promote what its members do: offer outsourced management services to customers on a subscription basis. The group initially includes 19 companies, such as start-ups SilverBack and InteQ, as well as companies that sell to MSPs, such as Hewlett-Packard. Although the industry is still in its infancy, consultancy IDC in Framingham, Mass., estimates revenue could reach \$78 million this year and grow to \$524 million by 2004. In the next few weeks, the association will hold its first meeting and elect officers, as well as set priorities and form working committees.

MSP Association: [www.mspassociation.org](http://www.mspassociation.org).

NetLock Technologies has unveiled NetLock 3, a \$100-per-seat desktop application for controlling security policies on file encryption and use, with policy control managed from a separate \$3,600 console. NetLock, Anderson Consulting and SAP plan to debut a hosted application service this fall based on NetLock technology. Pricing has not been set.

NetLock: [www.netlock.com](http://www.netlock.com).

Sequoia Software last week announced XML Portal Server 3.0, the company's business-to-business Web application server, which costs about \$300 per user. The latest version includes an XML-based personalized content-delivery capability for presenting targeted information at user-profile groups or individuals and also supports the Wireless Application Protocol for making Web information available to handheld computers.

Sequoia: [www.sequoia-software.com](http://www.sequoia-software.com)

## Schools master online exchanges

*Educational systems look to online buying exchanges to cut costs, speed purchasing.*

BY ELLEN MESSMER

Business is warming to the idea of using online buying exchanges to make purchases, and the same is true for schools, even the K-12 school systems not commonly on the cutting edge of network trends.

Public school systems, in particular, are actively seeking Web-based trading exchanges that bring together their traditional suppliers and introduce them to potential new ones. Several California school systems, for example, have begun purchasing from one of the exchanges, Epylon.com, and they give online buying high marks.

The Orange County Department of Education has made more than 50 separate online purchases for office and custodial supplies, software and textbooks in the two months since it started using Epylon.com, which is focused on the academic market.

Using Web browsers, authorized purchasing agents post requests for quotes to registered suppliers or a specific subset of them. The suppliers respond with electronic bids by a deadline, and the purchasing agent reviews those and selects a winning bid.

"We have found out about additional vendors we didn't know about before," says Nina Young, Orange County Department of Education director of purchasing, contracts and facilities.

Young says her department still uses telephone and fax to inform suppliers about upcoming contract opportunities but has let them know the county is taking bids online as well.

"It's easier, it's faster and it's saving us money," she says, noting the school system has a \$150 million annual budget, with almost 30% of it going to purchases.

Use of electronic purchasing is still new for the school system, but if it becomes commonplace, Young says she



Online suppliers need to excel in customer service and problem resolution, says David Louis with the Modesto City school system.

## Lotus seeks Exchange users

*Packages help customers migrate to Domino.*

BY JOHN FONTANA

CAMBRIDGE, MASS. — Trying to maintain the upper hand on rival Microsoft, Lotus is putting together a series of migration packages to help users move from Exchange to Domino.

It is no coincidence that Lotus Super.move Acceleration Packs will arrive just before Microsoft plans to release Exchange 2000, which should make its debut in the next few weeks.

Microsoft has integrated Exchange 2000 with Windows 2000, Active Directory and Office 2000 to create a platform for building collaborative applications. The platform is clearly aimed at attacking Lotus long-held advantage as a development platform provider with Notes and Domino.

The upgrade to Exchange 2000, however, is certain to be challenging for users because they must deploy Active Directory and Windows 2000 before they can make the move.

Earlier this year, the company

announced its BlueJay initiative, which is designed to integrate Microsoft Outlook and Office closely with Domino R5. The idea is that enterprises committed to Microsoft on the front end can still run Lotus on the back end and enjoy all the features of Domino.

Now Lotus plans to make it easier for users to switch to Domino servers.

See **Lotus**, page 36

would like to see the education department's back-end financial systems — based on Bitech software — modified to automatically accept the online purchasing information. That way, it would be possible to avoid additional key-entry work.

School administrators say a handful of other exchanges, such as Simplexis.com and Kawana.com, cater to the academic market. Schools are also buying online directly from distributors such as J.L. Hammett and Grainger.com.

"For the past three years, we've been using the Web for more and more purchasing transactions," says David Louis, purchasing agent at the Modesto City schools. "There are now so many Internet portals out there. But we're very interested in finding ones that meet our needs, that are focused on the educational sector."

The Modesto City school system also recently began using Epylon.com, and Louis says he's impressed that purchasing agents can get bids back in about 20 minutes. The school system is evaluating several exchanges, including Purchasepro.com, the Ariba Network, Commerce One Marketplace and Demandstar.com, that don't focus solely on educational buying.

See **School Exchanges**, page 36

[www.nwfusion.com](http://www.nwfusion.com)

### MAKING A MOVE

Lotus has a resources area online to help you migrate your messaging and calendaring systems to its offerings.

Begin with the company's "Getting started" page, which helps you gather information, evaluate your options and plan for the migration.





# Microsoft revamps Commerce Server 2000

*Tightly integrated service package supports electronic storefronts, beefier reporting tools.*

BY JOHN FONTANA

Microsoft next week will ship the beta of Commerce Server 2000, which should add some beef to its e-commerce platform.

The server, due for release in the fourth quarter, is the next generation of Microsoft Site Server Commerce Edition and has been redesigned to host electronic storefronts or "sell-side" commerce. The server has a new product catalog system, management tools and online analytical processing-based reporting tools. It also features enhanced data-mining and profiling capabilities.

Those features help enterprises tailor delivery of content to electronic buyers, such as offering discounts to repeat customers or special offers to first-time visitors.

Early adopters of Commerce Server 2000 say the new features are a welcome addition.

"The ability to track users and understand their behavior patterns is a huge benefit," says Barry Wadham, president

of C-Systems, a Concord, Mass.-based developer of e-commerce Web sites. He says the tracking ability lets Web-site operators collect information such as how much time users spend on a site, what products they look at and for how long.

Wadham, who has written two books on Commerce Server, has been running the beta testing of Commerce Server in production since early last month for his Web site Dogs in Review, an online magazine for show dogs.

"Until about two months ago, I was very guarded in my feelings about this server because I thought they wouldn't complete the feature set. But I think they came through," Wadham says.

Wadham says the performance is improved because of Commerce Server's hooks to Windows 2000 and COM+, installation is much easier and development time is significantly reduced. He also says the server's Site Packager greatly simplifies moving a commerce site from development to deployment.

## Electronic storefront

**Microsoft's Commerce Server 2000, which goes into beta testing next week, includes a number of new features for supporting electronic storefronts or so-called "sell-side" e-commerce sites.**

Features	Description
<b>OLAP-based reporting</b>	Provides for more dynamic reporting capabilities, integrates with Office 2000 Web components.
<b>Business Desk</b>	Set of modules for managing business operations including report reviews, marketing campaign creation and order status checks.
<b>Product Catalog System</b>	Built on a SQL Server; features tools for creating custom catalogs based on groups of users, integrated search and the import/export of existing data.
<b>BizTalk Server integration</b>	Support for XML-based exchange of catalog updates and purchase orders with business partners.
<b>Site Packager</b>	Provides ability to "package" components of commerce site into single unit for distribution and deployment to multiple servers.

But some critics say features are missing, including a back-end management component that can be dedicated to individual storefronts. Also, support for XML won't be complete until the server's next version.

But Commerce Server does have other features that could get users started including sophisticated search features, a graphical editor for managing business processes such

as checkout and shipping, and reporting tools for data mining. A feature called Business Desk has more than 20 modules that let site managers review reports, create marketing campaigns, update product data, check order status and modify profiles. Those capabilities should help Commerce Server compete against IBM's WebSphere Commerce Suite.

"We made all the components more tightly integrated so we could extract rich information that users can drive reports against to develop campaigns and profiles. We call that closing the loop," says Rebekkah Kumar, Commerce Server 2000 product manager.

Commerce Server 2000 requires Win 2000 Server and Microsoft SQL Server 7 or 2000. It is a key element of Microsoft's Windows DNA platform for building Web-based applications and is priced per processor starting at \$8,499 per CPU.

Microsoft: [www.microsoft.com/commerceserver](http://www.microsoft.com/commerceserver)

## School Exchanges, continued from page 35

"One thing I don't want to lose sight of is that while technology can help us process procurement, people still remain the critical linchpin," says Louis. That means that online suppliers shouldn't forget they still need to excel in service and problem resolution. "Ultimately, you still need people to fulfill an order."

The heated competition in online bidding suggests that exchanges are going to bring lower costs for schools, Louis says.

### What are the rules?

Some school systems say they are interested in online purchasing but need guidance on the rules.

"I've been able to go in and get a lot of quotes, but I'm waiting for approval from the State Department of Education

to do the actual purchase ordering," says Lorraine McKeown, purchasing clerk at the Lower Camden County Regional High School District in Atco, N.J.

Clearly on the educational buyers' short list, Epylon.com now has 1,500 registered suppliers presenting their wares to school purchasing agents.

The exchange is a free service to buyers, while suppliers have to ante up between 1% to 3% of online sales to Epylon.com as a broker fee, according to Kim McNair, senior marketing director.

The exchange is based on Art Technology Group's (ATG) Dynamo e-commerce software, running on Solaris, with the application written in Java and XML.

An Oracle database holds school contract information and supplier catalogs. The purpose is to give online buy-

ers a customized view of items they are authorized to purchase under contractual pricing terms negotiated by the schools.

"Some suppliers give us their paper catalogs, and we'll convert it to XML at no cost," McNair says.

Epylon.com also employs the WebMethods application server to pull down catalog data directly from a supplier's Web site and present it at the ATG e-commerce server for viewing by the purchasing agent.

"This allows the buyer to have this catalog information customized and aggregated for them," McNair says. ■

## E-commerce

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## Lotus, continued from page 35

"Clearly Lotus is trying to grab the spotlight from Microsoft, which has a major release coming up," says Jim Kobiulus, an analyst with The Burton Group in Midvale, Utah, and a columnist at *Network World*.

With the Super.move Acceleration Packs for Microsoft Exchange, Lotus is bundling existing tools with consulting services to help users migrate. The bundle includes the Exchange Migration Tools, which currently ship with Domino R5. It also includes a copy of Domino with 25 client access licenses and 25 Notes client licenses, computer-based training for administrators and end users, and books on Notes and Domino support and migration.

Lotus will offer three levels of Super.move. Level 1 includes five free phone-based incident reports. Level 2 adds four days of system administration train-

ing and 10 half-days of end-user training. At Level 3, Lotus bumps the end-user training to 20 half-days and adds seven days of on-site/off-site support from Lotus Professional Services.

"The bundle of software and services is useful because many organizations are still interested in migration, and it's a difficult area," says David Ferris, president of Ferris Research in San Francisco.

"Customers have to look at what it takes to upgrade to Exchange 2000, and what they want to do with collaboration and knowledge management," says Larry Zaykowski, a manager at Lotus. "Messaging and calendar migration is not difficult, but collaboration, knowledge management and workflow is where the value is."

Lotus plans to make the Super.move packs available this month. Pricing was not announced.

Lotus: [www.lotus.com/supermove](http://www.lotus.com/supermove)



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'Net Insider . Scott Bradner

## WILL VOICE-OVER-X BE VISIBLE?

**T**here has been a lot of buzz of late about voice-overs. Voice over DSL and voice over cable are all the rage in the trade press. But much

of the buzz misses what may be the real story.

Standards are being defined on how to run voice over these technologies.

The model assumes the service provider has a DSL circuit or cable connection from a point of presence (POP) to a customer location. At the

customer location there is a modem-like piece of customer premises equipment (CPE) attached to the line. The CPE has multiple connectors, one or more for each service that can be offered.

For example, a cable modem might have connectors for cable TV, high-speed Internet service and one or more phone ports. At the POP, the other end of the line is attached to some electronics that split the customer traffic into separate streams, one for each of the connectors on the CPE.

In this model, if the customer wants voice service he plugs a phone into a phone port on the CPE and the service provider configures the POP equipment to logically connect that phone port to a telephone service provider. The customer appears to have a direct connection to the phone service provider and gets the same type of phone service and bills that any other customer of that phone company would get, along with some potential savings resulting from the use of a shared-access line. This model is quite attractive to service providers because they can bill for each service.

But this is not the only model. An alternative is where the CPE is simpler and only provides cable TV and Internet service. If the customer wants to make phone calls, he does so from an Internet-enabled phone or a PC. In this case, the voice traffic is not separated out; it is sent along with all the other IP packets on the Internet link. The phone call can go over the Internet directly to someone with another Internet-enabled phone or to a gateway to the phone network run by a third party.

This is not attractive to service providers because there is no reliable way for them to figure out which is voice traffic and charge separately for that. But it will be attractive to customers for exactly the same reason.

The service providers may claim that without separating the traffic, they cannot guarantee the right quality of service for the application. I would claim that you should not be buying Internet service from a provider whose basic service is crappy enough that this makes a difference.

In any case, this alternative model has been generally ignored in all the buzz, but may easily be the dominant model in a few years.

Disclaimer: Harvard understands the concept of the dominant model, but has expressed no opinion on this topic.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.*

# Tie the circuit switched world into the IP universe



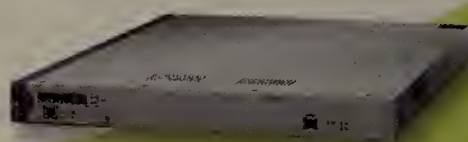
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- **Gigabit Ethernet and Terabit Router Vendors** – Add voice services to your product offering
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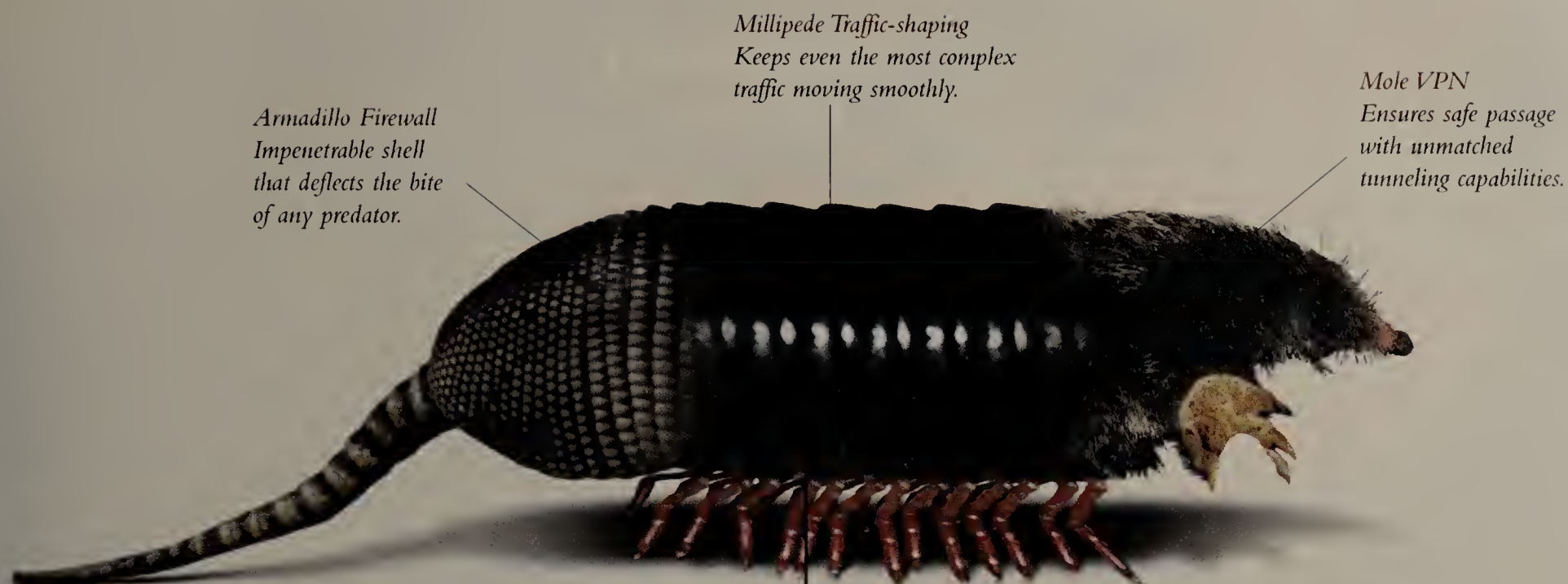
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**Fig 1. Complete Network Security**



**Fig 2. One Unreal Price: \$495**

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# Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

## Ask Dr. Intranet

By Steve Blass

I run a small network for 10 staff members. Right now, we are using our ISP to host our e-mail accounts. We are using Out-

look, but we do not have an Exchange server. Is there any way I can use a global/main address book for all the desktops and workstations without actually running our own Microsoft Exchange server?

You can create a global address book file in Outlook on one of the workstations and export it to a disk file that your users can then import into their Outlook client. You can distribute the address file either through a Web page or by e-mail. To export an address book file from Outlook, choose the "Export" option from the file menu and follow the prompts. Your users can then import the file by selecting "Import" from the File menu and following the prompts.

Keeping the global address book file in a network-accessible directory is one approach. Another approach is to use a Lightweight Directory Access Protocol (LDAP)-compliant directory services server to store organizational contact information so that users can get their address book information dynamically from a centrally administered repository, rather than by importing address book files individually.

Your ISP may be able to provide the LDAP directory services for you. A free LDAP server implementation is available from [www.openldap.org](http://www.openldap.org).

Blass is a network architect with Sprint Enterprise Network Services in Houston. He can be reached at [drintranet@paranet.com](mailto:drintranet@paranet.com).

## ATM + MPEG2 = efficient multimedia

BY DAVE PECORELLA AND MARTY DUGAN

**D**emand for rich media services such as Internet access, video on demand, digital television and voice over IP grows more clamorous every day. So, too, does the need for high-performance distribution technology.

To meet this demand, service providers are turning to ATM technology — a flexible, scalable way of moving high-speed voice, video and data across networks. ATM's sophisticated bandwidth utilization capabilities enable providers to efficiently transport large, complex video packets without taxing a network.

ATM, however, cannot efficiently distribute these services alone. Combined with MPEG-2 compression technology, providers can effectively transport rich media over ATM, while ensuring integrity and quality of service (QoS). Together, ATM and MPEG-2 provide competitive local exchange carriers and last-mile service providers — including cable television (CATV), telecommunications, fiber to the curb and wireless companies — with the technology they need to distribute high-quality rich media services.

The majority of traffic ported over the ATM infrastructure is voice and data. Video will soon be as prominent and will drive the need for more high-capacity ATM networks. The basis of ATM technology is a high-efficiency, low-latency switching and multiplexing mechanism ideally suited to an environment in which there are specific bandwidth limitations.

ATM allocates bandwidth on demand by constructing virtual channels and virtual paths between source and destination points on the ATM network boundaries. These channels are not dedicated physical connections, but are permanent virtual connections or switched virtual connections that are deconstructed when no longer needed.

The speed and reliability of ATM switched networks can't be matched by other popular WAN technologies, which are ill-equipped to transport high-performance data. However, even in an ATM environment, the nuances and peculiarities of digital video make it impractical to transport real-time video in its native uncompressed format over ATM. Using MPEG-2's sophisticated compression techniques, providers can alleviate technical roadblocks when managing and ensuring

the integrity of large, super-fast video streams over ATM.

To efficiently transport video in an ATM environment without jeopardizing quality, the Moving Pictures Expert Group (MPEG) developed a series of hardware and software standards designed to reduce the storage requirements of digital video. The group created MPEG-2, a compression scheme to efficiently distribute high-quality, full-motion video data.

Full-motion, digitized and uncompressed video requires a data rate transfer of roughly 270M bit/sec. With virtually

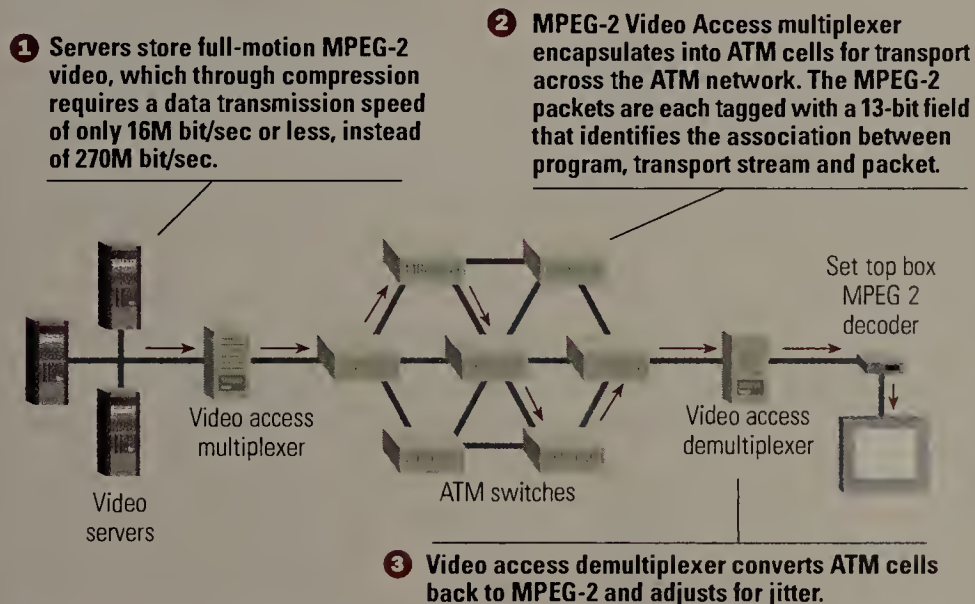
and then picking it off in good order takes care. The ATM network edge device must be particularly adept at handling MPEG switching and jitter management to compensate for propagation delays in the network.

Local MPEG-2 video streams are typically transported via an interface known as digital video broadcast asynchronous serial interface. ATM edge devices deconstruct either an MPEG-2 multiple program transport stream (MPTS) or single program transport stream to the program level and ultimately to the packet-

## HOW IT WORKS

### Moving multimedia traffic efficiently

Combining ATM services with MPEG-2 compression technology is an effective mechanism for delivering complex multimedia while maintaining quality-of-service. ATM and MPEG-2 are cost-effective, scalable, proven technologies that use bandwidth efficiently.



imperceptible quality degradation, MPEG-2 can reduce this to 16M bit/sec for contribution-quality video — used during the editing process — and to 4M bit/sec or 5M bit/sec for distribution-quality video as received by end users. Providers can ensure video quality by applying algorithmic compression techniques such as chroma subsampling, which uses color variation undetectable to the human eye. Motion vector estimation randomly samples frames to assess video quality at that given moment, enabling providers to ensure QoS in an ATM environment. Traditional IP routing technology, in contrast, cannot guarantee QoS.

Getting MPEG-2 onto ATM networks

identifier (PID) level. At the PID level, streams can be reordered and combined back into another MPTS. This process is referred to as remultiplexing. Each packet of MPEG-2 data is then tagged with a PID, a 13-bit field that identifies the association between a program, transport stream and packet.

This architecture is likely to become the predominant distribution method for rich media services.


Pecorella is product marketing manager and Dugan is manager of corporate marketing at Artel Video Systems. They can be reached at [dpecorel@artel.com](mailto:dpecorel@artel.com) and [mdugan@artel.com](mailto:mdugan@artel.com).



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Gearhead — inside the network machine . Mark Gibbs

## VBA AWAY! ADVENTURES IN CODING

Last week we overviewed Microsoft's embedded programming language called Visual Basic for Applications. This week, Gearhead will get down

and dirty ... kind of.

Out in the wide world, there are applications that let you record macros. You can then go into the recorded instruc-

tions and modify them. This is the model offered by VBA and most Microsoft Office applications. For example, under Word, open the Tools menu, select

Macro, then select Record New Macro.

Give your macro a name, click OK, and do some stuff. Associate that macro with a key sequence or a menu item and you can run it whenever you please.

You can also go directly to the VBA Integrated Development Environment to create or modify an application. Again in Word, select Tools, select Macro and then select Visual Basic Editor.

VBA programs exist within "projects," collections of modules, forms and other objects, and the document they belong to. The modules within projects are collections of procedures, which come in two types: Sub and Function.

Sub and Function procedures contain collections of statements — the actual code to be executed. VBA is a full programming language much like Visual Basic. Sort of.

Sub procedures can run by name and return no values to the process that calls them, while Function procedures can't be run by name but do return values.

So far this sounds well and good, but when you really get into the architecture of VBA you might start to think, "Gee, this is kinda messy ... this language looks sort of cobbled together." In Gearhead's humble opinion, you would be right.

Let us note in passing the old maxim: "A doctor can bury his mistakes but an architect can only advise his client to plant vines." In VBA's case, the vines are the applications that the language is embedded in.

At the heart of the VBA architecture are objects. As brutal and callous as Gearhead has been about the architecture, the object orientation of VBA is sophisticated. VBA objects (as with objects in other languages) have properties (readable and often changeable attributes), methods (the things that the object can do) and events (the things that happen in the VBA environment that cause the object to take action).

VBA also has object classes, prototype objects that are used to create actual objects or "instantiations" ("instances" in common language).

Moreover, under VBA, each application that supports VBA has its own "object model" — a hierarchical relationship that relates all the parts of a VBA-enabled application in a framework. For example, an application object model usually includes the active document, other documents, active window and other windows. By navigating the object hierarchy from a VBA program, you can do things such as modify Word documents automatically (for example, check all URLs in a document to ensure that when a URL doesn't end with an extension such as .htm a closing "/" is added).

If you have the patience you can do amazing things with VBA, but it isn't the easiest programming system to come to grips with. Gearhead recommends Steve Cummings' *VBA for Dummies*.

Coded responses to [gb@gibbs.com](mailto:gb@gibbs.com).

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## Editorial

### Challenging Web hosting firms to a Showdown

**H**as the explosion of Web hosting options left you befuddled? Is it better, for example, to go with the local guy so you can visit your cage once in a while, or does that huge carrier facility in the next state offer better 'Net access?

The hosting market seems to get more crowded every day. Early entrants like Exodus and Verio are going great guns, but they hear the thundering footsteps of giants like AT&T, Qwest and Level 3.

All of them more or less promise the same thing: a secure, environmentally controlled glass-house environment where you can put your Web and e-commerce

servers, comfortable in the knowledge that the devices are managed 24-7 and fed by multiple, disparately routed high-speed Internet connections.

So what differentiates one from another? We aim to find out in a Network World Showdown at this fall's Internet Commerce Expo at the San Jose Convention Center on Wednesday, Sept. 13.

We hereby challenge Exodus, Verio, MCI WorldCom, Qwest and Intel to send a top technical executive to participate in the Web Hosting Showdown, a featured show session.

Why these particular vendors? Exodus and Verio are market leaders, so they're both shoo-ins. MCI WorldCom can't be ignored because its UUNET unit is the largest ISP in the country. Qwest is interesting because it is stirring a suite of application services into the hosting mix. And finally Intel — a relative newcomer to hosting — gets invited because it brings a systems mentality to the game and tends to think big.

We need to hear back from these vendors by July 28. If some don't rise to the challenge, the door will be open to companies like AT&T, Global Crossing and Digex.

Having a mix of companies with different views and agendas should make for an interesting debate. I'll kick off the session, which runs from 2:30 to 3:45 p.m., by putting a few questions to the vendor panel, then let them question each other and wrap it up by throwing the floor open to the audience.

Log on to [www.iccexpo.com](http://www.iccexpo.com) to learn more about the Internet Commerce Expo. And stay tuned to see if these vendors accept our challenge.

— John Dix  
Editor in chief  
[jdix@nw.com](mailto:jdix@nw.com)

## Message Queue

### A NEW ROUTE

I read with pleasure Scott Bradner's column "Recycling failed technologies?" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8838). In it, Bradner refers to a piece John McQuillan and I recently wrote entitled "Rethinking routing" ([www.bcr.com/ngn/letter1.asp](http://www.bcr.com/ngn/letter1.asp)).

We believe reasonable people can disagree, so we would never suggest what Bradner has written is wrong. However, we feel his interpretation of our perspective may have been somewhat exaggerated. Neither John nor I believe datagram routing will no longer be necessary, although we did assert that the arrival of agile optical networking and thousands of alternative paths will alter the basic parameters substantially. To clarify Bradner's comments, in our view routing certainly will remain, but we expect it will have to change.

We invite all those with views on the future of the 'Net to join us at Next Generation Network 2000 in Washington, D.C., this fall, where such issues will be explored and debated in greater depth. Knowing we will have a diversity of opinions on and off the stage, it should serve to make the conference all the more interesting.

Liza Draper  
Associate  
McQuillan Ventures  
Concord, Mass.

### DIRECTORY DIALOG

Your story "Sparring directories" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8839) is typical of the war of words often seen between Novell and Microsoft. The one point rarely mentioned is that Active Directory requires Windows 2000. There is no true Active Directory unless all desktops and servers are running Win 2000. On the other hand, Novell Directory Services supports several server platforms and most desktop platforms.

Sounds to me like two boxers sparring in different rings.

Halden Totten  
Long Island, N.Y.

E-mail letters to [jdix@nw.com](mailto:jdix@nw.com) or mail them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

[www.nwfusion.com](http://www.nwfusion.com)

## MORE ONLINE

Find out what readers are saying about these and other topics.

**DocFinder 8023**  
find it online

I enjoyed the "Sparring directories" story, which I found informative and even-handed.

However, in the section titled "Active Directory partitioning causes Win 2000 outages," it appears there's either some confusion with the terminology or mislabeling. While the Novell claims address *partitions*, the test performed addresses *servers*. The two are not equivalent. While the tester had no problems deleting or demoting servers, which are entities residing within a domain, this does not necessarily address deleting or moving partitions, which are a domain-level entity.

It would be great if you could do a follow-up piece testing manipulation of partitions and not servers. I and others facing Win 2000 servers in the enterprise would be eager to hear your results.

Patricia Leeb-Hart  
San Francisco

### CLOSE THE WINDOWS

After reading the story "Scaling Active Directory" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8840), I'm frightened to use Dell as a "solution" provider. It looks like they were trying to shove Windows 2000 down the throats of those who may not have wanted it.

Thank you for this story. It really opened my eyes.

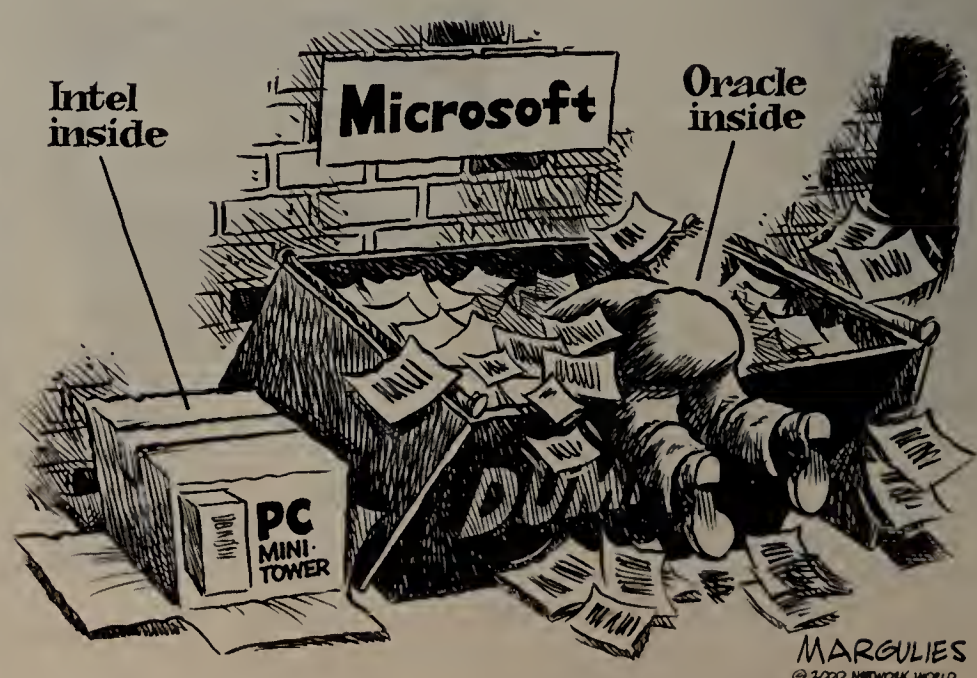
Mike Maday  
Chicago

### COOL TOOL

Regarding your story "Free Java-based office suite to make debut" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8841):

Applications such as ThinkFree.com's ThinkFree Office have the potential to change the way we use computers. We start to function in a "net-centric" way, running applications using a variety of computers, platforms and operating systems from a variety of locations. We knew this was coming — it's cool that somebody is really doing it and I look forward to trying it out. I hope it fulfills its promise.

Charles Nelson  
President  
Nelson Computer Services  
Fairfield, Iowa





## OF BALLPARK BEER SALES AND USER VIRUS EDUCATION

**Y**ou've probably heard about the controversy surrounding beer sales at Wrigley Field in Chicago. A few weeks ago, the Cubs were playing the Dodgers and a bunch of goofballs had too many beers and got rowdy. It got so bad that a few of the Dodgers went into the stands to beat up the goofballs.

What was the response to this incident? Rational folks may say that security should be beefed up, fans should be reminded about appropriate public behavior and players should let security professionals handle the goofballs. But no, the response was to prohibit vendors from selling beer after the sixth inning.

As a result, fans started drinking earlier and stocking up just before the cutoff, while the beer vendors tried to maximize their revenue by pouring beer at a record pace. The attempt at behavior control failed, and the goofballs continued their rowdy ways.

Back in the IT world, we have a similar problem in response to viruses. How did your organization

respond to the ILoveYou worm or any of its mutations? Most of the rational institutions blocked the virus as far upstream as they could, informed their users about the attack and what the appropriate response should be, and made sure everyone's client virus detection software was up-to-date.

Some of the more reactionary responses were to disconnect from the 'Net or ban the use of Outlook.

But how many companies focused on educating the user? In addition to knowing how to use computing tools, users should be able to recognize odd behavior and know what to do when they witness such behavior. Most of all, users need to be a little more paranoid.

Maybe I'm getting cranky in my old age, but I've become extremely skeptical of e-mail. If anyone knows of a universal mechanism that guarantees the sender is whom he claims to be and the note was sent for its stated purpose, I'm all for it. Until



then, my rules are:

- Delete all junk e-mail.
- Delete any message from someone I don't know that instructs me to do anything but read text.
- If a message is from someone I know and has instructions, I contact the sender to make sure it is legitimate.

Remember, don't throw away the tools.

These are as much an intimate part of your business as beer is part of a ball game. Instead, get your users to use the tools wisely.

If you have any thoughts on this issue, I'd love to hear them. Just don't send them as an attachment.

*Kuhfuss is chief information officer of Argonne National Laboratory, one of the U.S. Department of Energy's largest research centers. He can be reached at [tckuhfuss@netscape.net](mailto:tckuhfuss@netscape.net). The views presented in this column are his and do not reflect the views of Argonne National Laboratory or the Department of Energy.*

## NEEDED: AN 'ALL YOU CAN EAT' WIRELESS E-MAIL OPTION

**R**ecently I played around with Motorola's wireless e-mail device, the PageWriter 2000. About the size of a deck of cards, it has a readable screen and a full QWERTY keyboard, which I found usable if I typed with my thumbs only. I received e-mail on it and could also send e-mail to whoever I wanted using conventional formats.

The device worked most of the time, and despite warnings from pilots and flight attendants, it never crashed a plane. But something else unexpected occurred: a deluge of e-mail followed me wherever I went, and it didn't take long to exceed my monthly free e-mail limit. I was suddenly paying 25 cents per incoming e-mail, whether I wanted it or not. The bills mounted and I finally canceled the service.

That got me thinking. Today, telephones are being equipped with e-mail functions that echo those of text pagers. What happens when spam starts attacking wireless e-mail addresses? Spam lists are generated by collecting millions of e-mail addresses from Web sites and by farming the Internet. What is the poor beleaguered wireless user to do when he finds himself deluged by unwanted e-mail, especially if he pays by the message?

AT&T says from its perspective, this is a non-issue because "we don't charge for e-mail no matter how many you get." But other providers are not so liberal.

The salesperson at one carrier I contacted said, "We're not ready [to deal with spam] yet. You will be charged for each e-mail over your allotment."

Another provider said spam is not a problem because its servers are secure, and they filter out the spam. How do they do that? What have they figured out that the rest of the industry hasn't? It appears spam makes up 10% to 30% of e-mail we receive no matter what we do — the spammers' goal is to keep one step ahead of us. Filtering out massive amounts of e-mail from a single address is old hat, but randomized IP source addresses for spam get around that.

One provider advised, "Don't give out your wireless e-mail address." But is that really an answer? Another said, "We don't have a policy on charging customers for spam overload because it hasn't happened yet and we don't expect it in the foreseeable future." That's what much of the industry said about denial of service (DOS), distributed DOS, macro viruses in Word and so on.

As the power of the cell phone and wireless pager increases, people will be doing more Web surfing, Internet posting and the usual things generally done from Wintel boxes and Windows CE devices. The wireless industry won't be immune — it's going to have to face this issue sooner or later.

Until then, here are a few suggestions for wireless e-mail users:

- Ask your provider for its spam policy in writing. None of the providers I spoke with had a policy yet, and most said they would look into it.
- Know exactly how many e-mail messages you can get for free according to your service agreement and how much you need to pay for extra

messages — spam or not.

- Determine the capacity of your provider's e-mail server and what protection it uses against spam. A firewall is not necessarily a foolproof solution, as we all know from network defense.

- Be careful if you choose to forward your desktop e-mail to your wireless device. Not only will the size of the files overload the system, but on most wireless devices, attachments do not work.

- Some wireless e-mail systems use your cell phone number as your e-mail address. This could let the equivalent of wireless war dialing occur. Even if you don't publish your cell phone number, see if you can choose your own user ID instead — at least it will not be in a numerical sequence of assigned ranges of numbers and thus will be harder for spammers to get.

- Avoid giving out your wireless e-mail address to too many people. Don't post it on your Web site, Usenet or other public source.

As the capability of wireless devices increases, realize the likelihood of an increase of unwanted incoming e-mails. You could view your wireless e-mail address as the equivalent of an unlisted phone number, given only to a select few. But for many users, that defeats the purpose.

Ultimately, the answer will reside with the carriers. They will need to create service plans like AT&T's that include an "all you can eat" wireless e-mail offering, just as the Internet did when it grew up.

*Schwartau is president of Interpact, a security awareness consulting firm, founder of InfoWar.Com and author of the new book CyberShock. He can be reached at [winns@gte.net](mailto:winns@gte.net).*





# E-comm survival guide

BY STEVE ULFELDER

**Don't get blindsided by the marketing department. Here's how you can lead the e-commerce charge and boost your career at the same time.**

**H**ere's one that may sound familiar. A guy from the marketing department knocks on a network executive's door. "Hey, we're setting up a Web site, and we've got vendors coming in 5 minutes — want to join us in the conference room?" the marketing guy asks.

*That's a true story told by Linda Rossetti, CEO of eMaven, a consulting firm in Boston. Unfortunately, situations like this are all too common.*

*Nevermind the Sharks and the Jets. Today's rumbles are between the Chefs and the Plumbers.*

*The Chefs are from the marketing department. They're liable to whip up an e-commerce effort with little planning, less notice and absolutely no knowledge of the project's technical ramifications.*

*The Plumbers are the network executives. All too often, they're not called in until there's a catastrophe — the Web site gets overloaded by sudden demand that should have been planned for but wasn't, or marketing demands a thousand and one new ways to slice and dice data.*

*The Chefs taunt the Plumbers: "Just make it work, OK?" The Plumbers close in on the Chefs: "You gotta be kidding. If you'd called us in earlier, we could've avoided this mess." Things can get pretty ugly.*

With so many e-commerce initiatives spearheaded by marketing, it's easy for network and IT departments to get left out of the loop. Unrealistic expectations about easy Internet access abound; CEOs read airline magazines urging them not to trust the techies with the Web site. Marketing departments promise the CEO the moon — and soon.

"When Web sites first went up a few years ago, they were done by one guy," says Herb VanHook, vice president of service-management strategies at Meta Group in Stamford, Conn. "Now, the content and the infrastructure are split. There's a cultural divide. It's hard to cross that chasm."

Hard, maybe, but not impossible. Battle-hardened IT and network executives can work with, not against, marketing. It's possible to become one of the Chefs — while offering plumbing tips where needed.

As Rand McNally & Co., of Skokie, Ill., prepares to overhaul randmcnally.com, Larry Silverman counts his blessings. As director of Internet development, Silverman is in charge of the online division's technical direction. His marketing counterpart, Director of Product Development Jen Berger, has a systems-development background. "When I ask for a function or feature," she says, "I know what's involved."

Silverman adds, "When I say we can't have something for six months because we have to build it ourselves, she understands."

Not all IT and network managers are as fortunate as Silverman. In most instances, communication between network executives and the marketing department is limited.

David Cameron, senior director of systems integration at Wheelhouse, a Burlington, Mass., consulting company that specializes in e-marketing,







calls this problem the "semantic disconnect." He recalls a recent meeting with a client, in which marketing and IT representatives were asked four questions:

- What is a customer?
- What is a product?
- What is your distribution channel?
- What is your partner strategy?

The meeting was scheduled to last an hour. How long did it take marketing and IT to agree on the answers? "Days," Cameron says.

Marketing and IT found it nearly impossible to agree on terms. For instance, in trying to define customers, marketing people might answer, "Anybody who visits the site," Cameron says. "Marketers don't see that what they're counting are session cookies, not customers."

The disconnect got worse when products were addressed. "The marketing people said, 'Sure, we know what a product is,'" Cameron says. "They thought they had 15 [products]. But IT said, 'Wait, the product system incorporates 50 attributes.'" As far as IT was concerned, each of marketing's 15 products had 50 possible variants — and each was a product.

"We had to boil that down," Cameron says.

Another company where marketing and IT work together is Inc.com, an e-commerce spinoff of Boston's *Inc.* magazine. According to Paige Arnoff-Fenn, Inc.com's vice-president of marketing, open lines of communication at all levels were key to the successful launch. "I work very closely with our technical director," she says. "We make sure we know what we're talking about."

For Inc.com, that meant marketing and IT conducted research as a team — for example, observing focus groups together, a practice Arnoff-Fenn calls invaluable. Listening to target customers' wish lists forced the team to "clearly articulate in nontechnical terms what we were trying to accomplish," she says.

Talk to enough network managers and other experts, and the following advice emerges:

## Start before the beginning

If marketing launches an informational Web site and you keep it at arm's length, you're missing a golden opportunity to get involved. Many network managers check occasionally on such pages to make sure there are no disasters but are otherwise happy to stay out of the loop.

It's a natural reaction, but it's a mistake. You need a seat at the table when the shift from online brochure to true transactional site is being mulled.

"You can do informational things without IT," says Mike Gerrard, a research director at Gartner Group in Stamford, Conn., "but when you try to transact, that's when disaster hits."

The earlier you're involved in the process, the better chance you have to help marketing understand the risks, rewards and ramifications of launching a true commerce site.

## Talk it up

Many businesses agonize over whether to set up a

formal committee to attack e-commerce plans. Such a committee may be informal or structured.

Wheelhouse's Cameron advises companies to build "combo teams" composed of marketing and IT people. But he also cautions that "people go in [to such committees] thinking, 'This is great,' but committees are built around consensus, and consensus requires compromise. By the time the group's really chartered it's watered down. People get frustrated."

But not always. At Inc.com, the informal e-commerce committee helped people from both sides see where they needed to work. "When the tech team and the marketing team got in the same room, we saw that our systems were not integrated. We saw where the holes were," Arnoff-Fenn says.



**Alvin Boynton, IT manager of Intranets.com, says marketing often makes unrealistic demands for statistical information.**

Before Detroit's General Motors Corp. created its new online division, e-GM, the company formed a committee representing IT, marketing, sales, business development and other groups, according to Rick Kish, e-GM's chief information officer. "They pretty much took the best of each group, then filled in with experts from other areas," Kish says.

Experts do advise creating e-commerce committees, but only if they're accountable. "Otherwise, everybody nods and goes their own way," says Linda Rossetti, CEO at eMaven, an e-strategy firm in Boston. "The best committees have an agreed-upon project plan. Committees without accountability are a waste of time."

## Wear the customer's moccasins

If you find yourselves at an impasse with marketing, experts agree the best way to break the logjam is to view the problem through the customer's eyes. "Sure, you can get off-track," e-GM's Kish says. "That's when you must focus on the customer. Ask, 'What are we trying to deliver, and for whom?'"

Randmcnally.com's Berger agrees. "We put the customer at the center," she says. "We want to build what the customer wants."

## Treat the project like a project

Once an e-commerce group exists, whether it's formal or not, the network group can really show off. Chances are, the marketing department doesn't really know how to run a project. This is partly a function of personality — marketing tends to attract big thinkers who excel at clean-sheet-of-paper thinking, but not at follow-through.

Network executives, on the other hand, tend to thrive on project management, a cornerstone discipline of the IT profession. Setting goals, defining milestones and deliverables, leaning on people to hit deadlines, understanding interdependencies — all are facets of "classic" IT project management, Rossetti says. "Marketing doesn't necessarily follow those rules. And even if they follow them, they probably can't define them."

## Be the hard guy

Gartner Group's Gerrard says the real challenges in e-commerce projects are "business model issues, how to integrate the existing business with your Web strategy. The Internet technology piece is not the real challenge."

You know this. But do the marketing guys know this? More importantly, do they understand its ramifications? Probably not.

"When the marketing people have an idea for a Web site," Meta Group's VanHook says, "everybody knows they won't know about transaction rates, average volume, hit rates, etc."

That's where IT professionals come in. They need to continually keep marketing aware of the consequences.

"As business is figuring out what it can do, IT needs to help them understand outcomes," Gerrard says. "If they say 'Wouldn't it be great to do such-and-such,' you say, 'Yeah, that's great, but if we do that, we'll have X more orders, and we've got to have order-taking capabilities in that case.'"

Your role is to "help marketing make good decisions on technology, not burn resources on low-value-add things," eMaven's Rossetti adds. Network professionals can "help marketing dance around a pothole it would otherwise fall into."

But doesn't that put networking back in the wet-blanket role it's tried so hard to escape — marketing proposes, IT opposes?

"The common business-management complaints about IT are that IT doesn't understand business issues . . . and that IT is not agile enough," Gerrard says.

You stay ahead of both complaints by making sure you're heavily involved with any Web initiatives and proactively offer suggestions.

## Give the people what they want

Does marketing ever ask for things that are difficult or impossible to provide? "All the time," says Alvin Boynton, manager of IT at Intranets.com in Woburn, Mass. "Marketing is all about getting what they need, and that's it. They sometimes don't understand that we can't always pull a stat right away."

Wheelhouse's Cameron says, "They want to know how many customers are in Nevada and bought such-and-such a product and came from this list and have two kids."

Such shifting demands can frustrate IT, which is accustomed to heavy upfront project requirements that dwindle over time.

"Ongoing support of marketing systems is much higher," Cameron says. "Marketing folks don't say in advance what they need."

Intranets.com's Boynton has made his life easier by responding to marketing's endless requests for data.

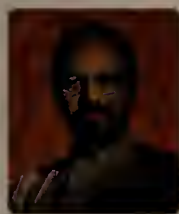
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Continued from page 50

"We've bought or built a lot of automated tools," he says. "[Marketing] can pull pretty much anything — how many users [are at the site], user minutes, whatever."

## Manage the outsourcer

You can expect to educate around the issue of outsourcing. The marketing people, under the spell of business magazines and dot-com ads on TV, are likely to think one phone call to an outsourcer solves the problem. If they've ever kludged together an informational Web site, this belief may have been rein-

forced by the project's relative ease.

"Even if it's outsourced, only the front line is outsourced," Meta Group's VanHook says. "The application servers, the database servers, the Common Gateway Interface servers — they all still need to be handled on the back end. The network people still have to

get involved."

Managing outsourcing is a subspecialty that will grow in importance. If your company is considering vendors such as Digex and Exodus Communications, you need to be the hub. You'll evaluate vendors, help decide applications to outsource, negotiate service-level agreements and manage the relationship.

E-GM, which has seen two billion hits since it went live late last year, outsources to IBM Global Services' Web Hosting Services. "Still, managing all that — capacity planning and performance, looking at potential volume, when it's going to hit — how do you prototype that?" Kish asks.

He says benchmarking huge, hard-to-predict volume increases is a key role for eGM network managers. And helping marketing understand the importance of the work is just as critical.

Intranets.com's Boynton agrees. The company uses NaviSite, an application service provider and Internet hosting company in Andover, Mass. "You don't just bring in a box, plug in a couple of network cables and get everything to work," he says. "I handle benchmarking and traffic patterns. We gather stats and predict what we're going to have to put in place."

Boynton considers himself fortunate because at Intranets.com, "Marketing understands very well what can happen when you're too successful for your hardware."

## New role

The bottom line is that there's no need to be a second-class citizen in your company's e-commerce initiatives.

"When IT sits down at a business meeting," eMaven's Rossetti says, "a lot of demons walk in the room."

But you can exorcise those demons. Start with the customer, work back through the business need and then focus on network technology as an enabler.

As the resident expert on networks, you can move the project forward, and make friends in marketing, by educating the businesspeople about the potential of technologies they otherwise wouldn't know about or understand.

"I demo new things to foster brainstorming," randmcnally.com's Silverman says. "Hey, if you had this, what could you do with it?"

This kind of thinking not only helps your company's e-commerce project, it helps you recast your department as a proactive, customer-focused part of the team. It keeps you in the loop. It makes you a bona fide Chef.

"Make sure everybody knows you're there to help marketing be successful," Rossetti says. "It's a sell job, but it can be done."

*Sulfelder is a freelance writer in Southborough, Mass. He can be reached at [sulfelder@charter.net](mailto:sulfelder@charter.net).*

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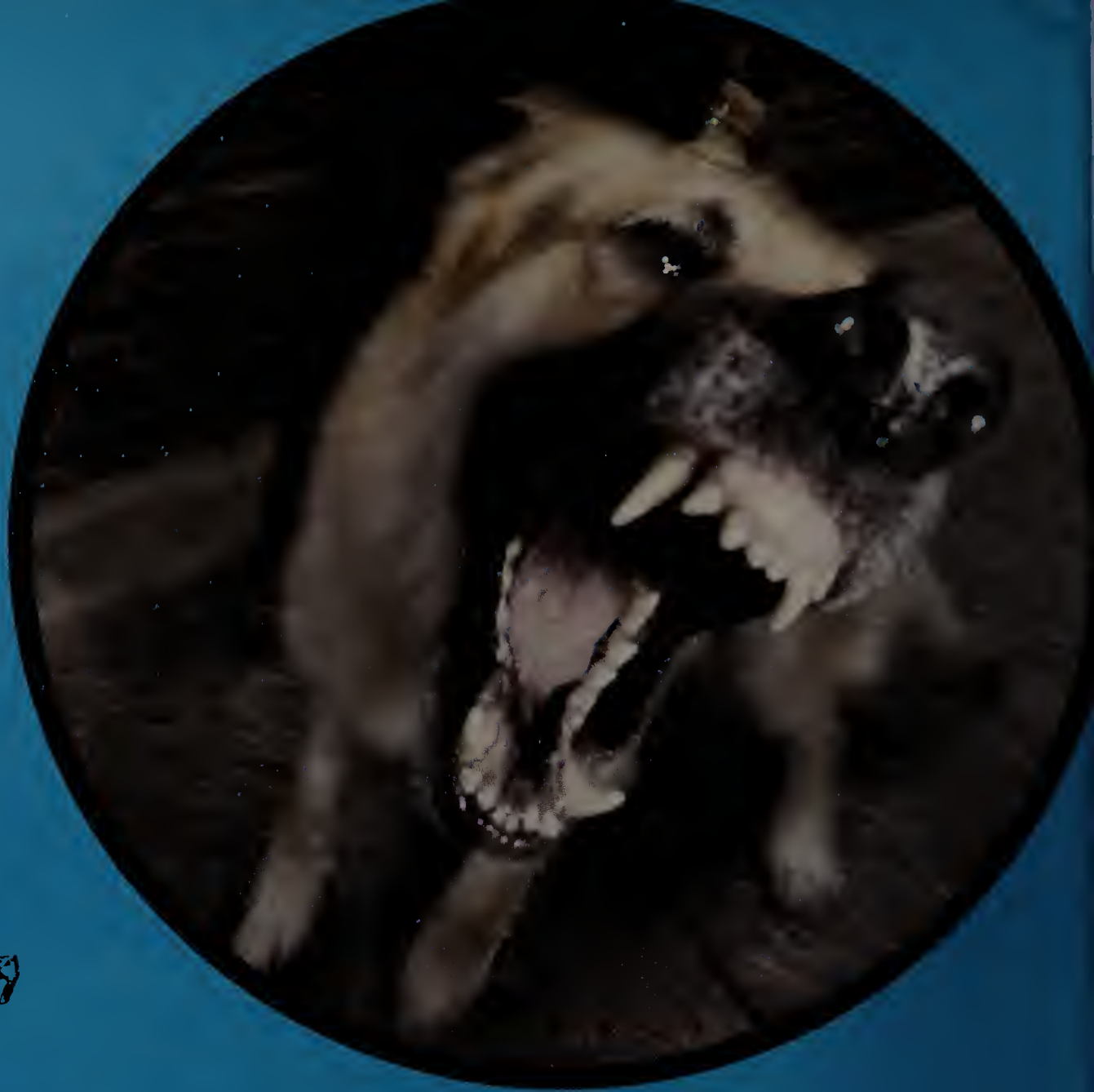
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# PEEPING tools

**Nine tools that  
can snoop on  
your employees.**

BY TRAVIS BERKLEY

**T**he Web. The 'Net. Cyberspace. Whatever you call it, your employees and co-workers are going online to find stuff — some useful, some inappropriate. So how is a network manager supposed to keep on top of such things?

The range of solutions is as varied as the Web itself, so we decided to present a roundup of nine products that fall into three categories: products that look for files stored across your network; products that monitor where your employees are surfing; and products that dig a little deeper into the monitoring process.

We begin with products that make sure “bad” files (pornography, games, MP3 files and those nasty Napsterites) don’t get stored in places they aren’t supposed to.

## FILESCREEN 2000

**Company:** W.Quinn Associates  
800-829-3453  
[www.filescreen.com](http://www.filescreen.com)

**Cost:** \$195 per server

**Pros:** Fast, great for novice users

**Cons:** Savvy users could disguise files.

**Grade:** B-

installed on every Windows server or workstation that you want to protect. But you can install the software remotely to any machine in the domain, making the task manageable. The replication features ensure that each installation uses the same set of policies and filters. It works in two ways: Each client agent monitors file activity in real time as items are saved, moved or renamed. The central management console also lets you scan any drive that you can map to.

The overhead associated with this method is very small. In fact, the documentation states that the overhead “is so small that it is not measurable.” That’s a pretty bold statement, but rest assured that disk throughput didn’t suffer

## What have we here?

FileScreen 2000, by W. Quinn Associates, works with Microsoft Windows NT and Windows 2000. It also uses the Microsoft Management Console and Microsoft Data Access. Not only can it search the drives and shares across your domains, but it also aims to prevent users from storing files that you deem inappropriate.

The program must be



ILLUSTRATIONS MARK SHAVER

once FileScreen 2000 was installed and running.

Out of the box, FileScreen 2000 has almost 20 predefined screening groups. These groups are categorized by common types of files, such as graphics (either 2-D image files or 3-D game files), audio files and Office files. The screening groups are referenced by policies that determine what action to take when it finds a “bad” file. Policies can be configured individually or by workgroup. Additionally, filters can be employed within the policy to skip a particular storage area.

When the program finds an infraction, the incident is logged on a database and stored for a configurable period of time. Reports can be generated to summarize infractions and show problem spots. You can then select all of the results and delete them in a single click.

Administrators can be notified via a pop-up window on the management console or by e-mail. The program can also make an entry in a server’s event log or send an SNMP trap. Each policy can have its own set of actions. By default, the user is notified of an infraction with a pop-up dialog box. But if the policy is set to only observe and record, an administrator may choose to not inform the employee of his or her transgression and only save the evidence. Your policies may vary.

Built into the console is a monitor that lists the infractions that have been logged. You can run a query that refines this list down to a particular policy violation or to a user or group. The results can also be printed or saved. A very nice ergonomic feature is a zoom feature that adjusts the font size to



suit the situation.

However, FileScreen 2000 isn't quite a magic bullet. Some of your savvy users can find ways around the restrictions. The sole criterion FileScreen 2000 uses is the name of the file, including the extension. A sneaky user could store all of their .jpg files as .jp\_, for example, and not trip any of the policies. But FileScreen 2000 is smart enough not to allow renaming back to the offending name. So a cagey user would be able to disguise files, but it would be difficult to use them.

FileScreen 2000 could be a far more useful program if the reporting features were more flexible. While there are several handy reports available out of the box, most administrators would welcome additional reports on more topics or the ability to create your own without an add-on reporting tool. While not a drawback, these functions could be a nice enhancement in future revisions.

## ANTIGAME PLUS

**Company:** DVD Software  
949-376-6678  
www.antigame.com

**Cost:** \$279 for 100 users

**Pros:** Admin can add games, fast scan technique

**Cons:** Doesn't scan running games, must be on disk to "see"

**Grade:** B

## Looking for Quakers

Our next file seeker is AntiGame Plus by DVD Software. AntiGame Plus was initially designed to find games that might be lying around on various PCs and servers across the network. However, it can also be used as a nifty clean-up utility.

You can use AntiGame Plus interactively or in a silent mode that runs without the user's knowledge.

Out of the box, AntiGame Plus Version 5.0 can detect 10,850 games. The program doesn't rely on file names as that would be an easy way to defeat detection. Instead, it looks for matches in file size and a signature

of the file, which works like a checksum. If the file size and signature match AntiGame's database, the program declares a detection. This scheme isn't fool-proof, but it achieves reasonable content scanning and retains decent level of performance. It falls short with games that have multiple patches to the executables. For example, it didn't detect an installation of Quake II that had an added enhancement pack. This changed the signature of the executable, which made it look different than the original game.

With each new release, AntiGame adds more games to the list, in addition to delivering them as updates through a subscription service. Game lists are updated two to four times each year, and the administrator can connect to a DVD server through the Internet to update the database. The server will either confirm an up-to-date database or download a newer version.

A bonus to AntiGame Plus is its ability to find and remove anything that you can define. Remember those electronic Christmas cards that float around each December? You can create a customized entry to seek out and destroy these pesky vermin. A companion utility creates secondary databases that can also be used for scanning. It's fairly easy to create a new definition and associate other files to delete.

By default, AntiGame scans only executable files (those with .exe or .com file extensions). You can also scan all files to catch Dynamic Link Libraries or other file types. In addition, AntiGame can scan archives, such as .zip files, which could catch a Napster installation.

Another nice feature of AntiGame Plus is its deployment — it doesn't have to be installed on the machines it scans. This lends itself to being launched from logon scripts, such as those in NetWare or NT. AntiGame's silent mode won't show up on the user's screen, nor will it appear as an icon on the desktop or system tray. However, if the user has authority to launch the task list under NT, it will show up as a process. The only real clue that might tip off the user is the droning of the hard drive for the duration of the scan. Because the scan is taking place on the users' workstation, reports have to be saved to a location the employee has access to.

DVD Software recommends running "scan and log" first. Once games are confirmed, you can change it to actually delete the offending files.

## GAMEWARDEN

**Company:** Wards Creek Software  
888-366-8807  
www.wardscreek.com

**Cost:** \$2,000 for 100 users

**Pros:** Runs silently

**Cons:** Needs timely updates, admin can't add games to database

**Grade:** C

## Finding the players

The next product is GameWarden by Wards Creek Software. GameWarden specializes in tracking gameplay across your network, terminating or preventing it where appropriate. A client is loaded on each machine that you want to track. The client then communicates with a server to report information and check the gameplay policies.

Loading the client can be done through any logon script or similar mechanism. Once running, GameWarden is silent and difficult to detect. It reports activity to the server and checks to see what actions it needs to take.

GameWarden can configure policies based on user name, time of day or even length of game play. For example, if you want to allow some game playing, you can set a time limit. When that limit has been reached, the game play will be flagged as "excessive." The user can then be notified, or the game can be automatically terminated. In either case, the event is logged for review by the administrator.

Currently, GameWarden cannot accept new games defined by a local administrator. Updates can only come from the authors of GameWarden because they use hard-coding instead of a database. So if someone were to bring in the latest gaming craze, chances are GameWarden wouldn't detect it, unless their updates were frequent and timely — and GameWarden hasn't been updated in close to a year.

Another thing to note is that GameWarden is blind without its client. If your users discover you're using GameWarden and understand how it works, they can prevent the client from loading. If so, their gameplay

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# WINDOWS 2000 MAGIC.



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would go totally undetected.

GameWarden does have some decent reporting functions. It makes it easy to see who has been playing listed games and for how long. Popular games and popular times of day are other reports available. A nice enhancement would be for GameWarden to determine if the users in your company were playing multiuser games against each other or against Internet opponents.

The underlying functionality of GameWarden is quite sound. But without timely updates its use is limited. The local administrator either needs to be given the capability to add new game definitions, or game updates to GameWarden need to be released more frequently.

## SUPERSCOUT

**Company:** SurfControl  
831-431-1400  
www.surfcontrol.com

**Cost:** \$2,000 for a 100-user license, \$995 for subsequent yearly subscriptions

**Pros:** Good site list support and reporting tools

**Cons:** No Web interface, no real-time status

**Grade:** B+

## Surfing sheriffs

Our next category of products looks where users are Web surfing and what services they are using at those sites. At a minimum, they provide the telltale signs of who's been where. In some cases they can even prevent unauthorized or unproductive use.

First up is SuperScout, by surfControl. SuperScout runs on NT servers and workstations. SuperScout tracks what sites users are surfing to, tracks the types of traffic they are generating and can block users from sites deemed inappropriate.

SuperScout pulls user names from NT domains and Novell Directory Services trees and matches them to users' workstations. The administrator can create subnets or domains to aid in tracking sites and

users. If more group definitions are needed, you can create user groups separate from those found in your network structure. This gives you the granularity you may need if you have overlapping groups of users or groups who have been granted exceptions. Security and blocking are handled with a rules-based engine. The administrator can set up a hierarchy of allow-or-deny rules that scrutinize who can go where and when, and who to notify if a rule is breached.

SuperScout is optimized to help get a handle on your staff's Web surfing. But it can easily be adapted to look at virtually any TCP/IP service. For example, it's easy to create a rule to allow Web surfing to a particular site but disallow FTP access. If a user tries to FTP to that site, it will be blocked by surfControl.

A subscription service is also available from surfControl to automatically classify and update sites and the categories they fall into. This lets surfControl worry about what is an adult site and what isn't. Just create a rule to block the category and be done with it. surfControl staff look at the sites to categorize them. For example, a medical site containing the word "breast" would probably not be considered a "vulgar" site. If you still want some control over site categorization, you can create more categories.

Also, the Web4Business list helps categorize businesses by industry. For example, you could allow free browsing to other businesses within your industry, but block access to other types of sites.

Notification of infractions can be accomplished using Simple Mail Transfer Protocol mail. There are seven variables that can be inserted into the message body to give the administrator a quick idea of what the problem is. For example, you could have an anti-porn rule that would send an e-mail that says "at [time, username] accessed porn at [site] from [workstation]."

SuperScout doesn't have a Web interface, nor can it show statistics in real time. But the powerful reporting tool makes up for it. Many predefined reports can help you see how the network is being used, and for what purpose. Some reports are tabular, such as a list of all the sites accessed; others are graphical, such as the top 10 sites visited according to frequency.

The reporting engine is also very flexible in creating custom reports. Whether it's by time, by group of users, by site or another category, within a few mouse clicks an informative report is just around the corner.

## WEBSense

**Company:** WebSense  
800-723-1166  
www.websense.com

**Cost:** \$1,000 for 100 users

**Pros:** Excellent reporting tool, builds on speed of Microsoft Proxy Server

**Cons:** Policy overlap can be confusing

**Grade:** A-

## Making WebSense

Our next surf snooper is WebSense for Microsoft Proxy Server, by WebSense. WebSense is a plug-in for Microsoft Proxy Server that enhances its functionality by restricting and/or reporting the traffic passed by the Microsoft Proxy Server.

WebSense maintains a categorized database which is periodically updated. While it contains a vast number of sites (well into the thousands), administrators can add their own sites or categories.

When defining categories, there are the mundane permit and block options. WebSense also has built in two other options: "defer to AfterWork" and "defer to AfterWork/continue."

A category listed as "defer to AfterWork" will inform the employee that the site is restricted, but it grants the option of postponing viewing. If the employee agrees, the program connects him or her to the AfterWork.com site, where the URL can be stored and retrieved at a later time. AfterWork.com, a portal site launched by WebSense, has individual logons where a user can store and organize any number of URLs. The site is available for free and doesn't have to be used in conjunction with WebSense, making it easy for an employee to access stored URLs from home.

The "continue" option warns the user that the site is restricted but will let him or her continue viewing the site for work-related purposes. In addition, there is an administrator-specified timeout for how long the employee can continue to view the site before it's blocked. A good example would be weather-related

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sites — you don't want your users browsing there all of the time, but letting them quickly scan a forecast wouldn't hurt.

WebSense also categorizes sites via keyword scanning in the URLs. It would be possible to leave a category unblocked but use the keywords to catch exceptions. For example, you might be willing to let your employees browse government sites, but you don't want them going to the Internal Revenue Service site to download tax forms. You can simply add a blocking keyword of "IRS" to the government category. You would need to be careful if a word like "sex" was included in certain URLs, such as "Middlesexnews.com."

These category definitions can then be used to create policies. A policy simply states a time interval and days of the week that a particular category is in force. There can be multiple definitions active in any policy. For example, it is easy to allow browsing to sports sites over the lunch hour, but block them during normal work hours.

These policies are tied to workstations that use the proxy server. The administrator can tie a policy to an NT domain defined group or to an individual user. Workstations or entire networks can also be set up to use specific policies. Finally, a default policy is in place for objects that don't fit any of these groups.

The WebSense Reporter (a separate application that works with other WebSense programs) comes with a large number of predefined reports and graphs. Some are detail-oriented, while others summarize events. If information about a particular user's browsing habits is needed, it's easy to specify the user and the date range to produce a history of where they've been. Other noteworthy reports are top sites and categories, times and bytes transferred, and reports for uncategorized or unknown sites.

Overall, WebSense is a powerful and easy-to-use package. It extends the capabilities of the Microsoft Proxy Server and provides some useful reports.

## Watching the traffic

The last two products in this category are by Elron Software. Internet Manager watches traffic moving across a specific segment on your network, presumably the segment near-

## INTERNET MANAGER

**Company:** Elron Software

800-767-6683

[www.elronsoftware.com](http://www.elronsoftware.com)

**Cost:** \$2,495 for 100-user license

**Pros:** Good alerting, no site list to maintain

**Cons:** Dictionaries can be fooled

**Grade:** A-

est to your Internet connection. Message Inspector watches e-mail and news traffic as well as FTP and telnet, and pays special attention to content.

Internet Manager is able to log or block traffic based on policies created by the administrator. These policies can be based on any combination of user name or group, workstation address and time of day. Currently, Internet Manager can tie into an NT domain to query user names. There is also an agent that can be installed on user workstations to mandate that browsing will occur with an authenticated connection. In other words, if this mandate is set, it defeats anonymous browsing by simply bypassing the logon prompts on a Windows 95 machine. But Internet Manager will work fine without this agent.

Internet Manager takes a slightly different approach to managing sites. It doesn't use preconfigured site lists, but relies totally on dictionaries containing inappropriate words or phrases. The list is categorized into each dictionary, such as one for sexual content, one for sports, one for gambling and so on.

Internet Manager not only scans the URL, but also any Common Gateway Interface (CGI) parameters included. It can be configured to automatically block sites that contain words and phrases found in its dictionaries. It will then send a notification to the administrator about the action it has taken. Also, the administrator is free to interactively block or unblock sites that scroll across the real-time monitor screen.

In addition, four different dictionaries can be identified to provide special on-screen notifications by having the activity highlighted in a particular color and possibly playing a

.wav file to go with it. This makes it very easy to see from across the room when a particular dictionary has caught an infraction.

An interesting caveat to the dictionary approach: As we were trying to trigger rules in the stocks dictionary, we were amazed to see [www.etrade.com](http://www.etrade.com) flagged as a sexual content site, and immediately blocked. After further review, the solution became obvious: E\*trade uses "xxx" as empty values in its CGI calls. You guessed it: "xxx" is a phrase in the sexual content dictionary. A quick "unblock" of E\*trade fixed the problem. But this shows that you have to be careful about what you put into your dictionaries. Of course, if your climate is more temperate, Internet Manager could have been configured to simply warn the administrator of this condition and not automatically block the site.

Internet Manager has its own Web server and provides a Web interface to do remote administration and reporting. It's a very nice interface, which rivals the real-time monitor in functionality. In fact, the only function that the Web interface does not seem to have is the scrolling site list. The one drawback is that Internet Manager won't use any existing Web server that is on the machine. It wants to serve up its own HTML, so you need to take care that any other Web server ignores the Internet Manager port.

The reporting features of Internet Manager are also impressive. Reports can be broken out by user, site, time of day, protocol (for example, HTTP, FTP or telnet) or the dictionary that caught the infraction. Graphs of popular sites, most frequently used dictionaries and others are also available. Perhaps as a future enhancement, Internet Manager will be able to generate these reports on a scheduled basis and mail them. Currently, they are generated on demand through the Web interface, where they can be printed.

Internet Manager is an effective and easy-to-use tool. Once you get into the mindset of using dictionaries instead of site lists, it becomes easy to create policies to effectively screen unwanted content.

## Looking at e-mail

The next product was Elron's Message Inspector. Primarily a tool to scan e-mail and news messages, it can also watch FTP sessions. Depending on how

Message Inspector is used on your network, it can simply generate reports, or take a very active

Continued on page 62





10562864100000658930700058028757906725654385007281871002002384767467438200097 6236488567268956749856385  
03538910835351201018876478756369836737001327639390910

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Continued from page 60

## MESSAGE INSPECTOR

**Company:** Elron Software  
800-767-6683  
www.elronsoftware.com

**Cost:** \$3,349 for 100-user license

**Pros:** Main and Web interfaces the same, good content analysis

**Cons:** Java client needs polish

**Grade:** B+

role in managing content. If it can see the network traffic nearest your Internet connection, it can effectively monitor all SMTP and news messages coming into your company. However, if Message Inspector is given two network interfaces and configured to forward messages, it becomes much more powerful, as we'll detail below.

Message Inspector is configured through a Java-enabled browser. But if you elect to install the client locally on your machine, it will install a Java Virtual Machine for you to run without a browser. The upside is that the local administration and the Web administration are identical. However, the interface isn't as glamorous as you have come to expect from traditional Windows-specific program interfaces. This doesn't mean that the functionality isn't there — it just isn't as pretty.

Message Inspector, like Internet Manager, relies on dictionaries. These basically list keywords that can be used to identify inappropriate message traffic. One of the predefined categories is "confidential." This category can be used to hold project code words, trademark names or other information. Message Inspector can then be set to watch for these words and phrases to make sure no one is leaking information. Of course, Message Inspector can watch for the standard fare of sexually explicit words, sports, gambling or drug terms, and so forth. These filters are used in conjunction with time of day, addresses and

user names to create policies.

Once it's found the offending words, Message Inspector can log the event, redirect it, reject it, notify the administrator or send it. But if you configured it with two interface cards, Message Inspector can do much more. The program can still pass and log messages, but it also now can block or redirect messages. The messages could first be sent to an administrator for approval, then delivered as normal later.

Message Inspector can also block certain file types. If you have no use for .jpg or .gif files at your company, it's easy to create a policy that looks for message attachments with those extensions, news messages with those contents or even FTP sessions.

One very attractive feature of Message Inspector is its spam filter. Message Inspector has a predefined filter list that can catch most of the spam traffic out there. The administrator can decide to delete the messages entirely, or the subject lines can be prefixed with the word "spam," for example. Because some employees may have a use for certain spam messages, this feature gives the administrator flexibility to warn without deleting these types of messages. Furthermore, you could attach a warning that says "Danger! Virus potential!" to .vbs files, which were used in the recent LoveLetter virus attacks.

Message Inspector also has nice reporting features. It can report on broken policies, times of day, particular addresses and particular users. Graphs can also be generated and archived.

One minor drawback is that Message Inspector has no real-time monitor. Reports can be generated quickly, but if there's one thing administrators like, it's up-to-date information.

### Checking the wire

The last category contains products that dig a little deeper. After using them for a while, one gets the sense that they were made by folks who have spent a lot of time in wiring closets sniffing packets.

The first product in this category is LittleBrother Pro, by LittleBrother Software. As the name implies, it's always watching. LittleBrother Pro installs very quickly on any Windows platform, either as a single stand-alone installation, or in a client/server setup where the data is collected and stored on one machine and management

and reporting takes place on another. The single-machine configuration is recommended during the installation. A version of the Apache Web server is included if the machine doesn't have a Web server to run LittleBrother Pro's Web interface.

As with most products of this type, it must be installed at the appropriate place on your network to see and capture the relevant data — presumably as close to your Internet connection as possible. In addition to TCP/IP, LittleBrother Pro can also be configured to monitor IPX and AppleTalk protocols. And, while the default setup monitors all traffic, LittleBrother Pro can be set to only watch Web traffic.

Out of the box, LittleBrother Pro watches and listens. It also has many useful reports available. For example, it can generate reports or display in real time your "top talker" — the user and workstation generating the most traffic. In addition, that information can be broken down into which sites he or she

## MESSAGE INSPECTOR

**Company:** LittleBrother Software  
408-263-9881  
www.littlebrother.com

**Cost:** \$2,995 for 100 users

**Pros:** Lots of detail, recognizes game traffic

**Cons:** Web interface needs polish

**Grade:** A

is trying to visit, and what services are employed (telnet, FTP or Web protocols). To complement this, there is also a "top sites" report that shows the company's favorite hangout and who is frequenting it. This information can be detailed according to time connected or data transferred.

LittleBrother Pro also rates the sites and services into four basic groups: neutral, productive, unproductive and not rated. Not rated is self-explanatory, but usually involves protocols or sites that LittleBrother Pro has no knowledge of, such as your local servers. The other three ratings are somewhat subjective,

Continued on page 64





# I am data.

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book you're reading,  
film you're watching,  
product you're selling,  
paycheck you're earning,  
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Continued from page 62

depending on your business. For example, out of the box, an attempt to browse [www.weather.com](http://www.weather.com) would log an unproductive hit in LittleBrother Pro's databases.

There are numerous site categories defined in LittleBrother Pro's databases. A few examples are business, computing and science, all rated productive; politics, humor and entertainment, all rated unproductive; and education, health and law, all rated neutral. Within these categories are hundreds of predefined sites. As the administrator, you are free to change the ratings of these groupings. For example, if you are an investment firm, you may wish to change "money/investment" from its default unproductive status to productive.

As new sites are discovered, LittleBrother Pro can be configured to either notify the administrator, or attempt to automatically categorize the site and report its efforts.

LittleBrother Pro can also be thrust into the role of traffic cop. Although not active out of the box, several optional rules can prevent access to various sites and services. A good example is the "block sports" rule that prevents all traffic to sites grouped in the unproductive sports category. There are also rules to block services, such as chat or telnet, instead of the sites to which they are connecting. The rules can act on individual users or groups of users and can be set to be active in one-hour increments.

Multiplayer game traffic also doesn't get by LittleBrother Pro. It recognizes traffic from popular network games and rates this type of traffic as unproductive. Using the real-time monitor, it's easy to see how much bandwidth is being used not only by games, but by streaming media applications, too. For example, it could look for well-known Napster ports, or look for connections to the main Napster servers. The real-time monitor is a very handy tool that can be used to keep tabs on your high-traffic users or popular sites. It updates itself every few seconds.

The administrator is free to create customized rules, user groups, site categories, reports and ratings. In addition, most of the settings are customizable, except changing the original contents of or deleting these default categories. However, LittleBrother Pro can be configured to receive updates to the categories on a regular basis.

Finally, Little Brother's Web interface is very easy to navigate. The interface is password-protected, just like the desktop application. It is mainly a reporting tool, however. If you need to make any changes to the behavior of LittleBrother Pro, you need to fire up the desktop client.

## TRAFFICMAX

**Company:** Intellimax Systems

408-363-8000

[www.intellimax.com](http://www.intellimax.com)

**Cost:** \$995 for base server, \$199 per additional agent

**Pros:** Can see lots of data, voluminous reporting

**Cons:** Could use remote interface

**Grade:** A

## Extreme traffic cop

Our final product is TrafficMax by IntelliMax Systems, which runs on any Windows platform. It makes the administrator add the services manually, but the install is still a 5-minute exercise. As with most products of this type, TrafficMax can only report on what it sees. The more segments you need to watch, the more places you'll need to deploy part of TrafficMax.

TrafficMax deploys across the network using agents, as opposed to a complete and separate install at various spots. Each agent collects the same information and enforces the same policies. But the agents can all be controlled and managed from a central administration console, which by default is the first installed machine.

If you like to have as much information as you can squeeze onto a screen, TrafficMax will be your best friend. There are a plethora of graphs available, each updated in real time. Various graphs target specific layers, such as packet details and types, Ethernet details, TCP/User Data Protocol (UDP) statistics, and so forth. Charts are also available detailing specific values. Each can be generated according to traffic, access time and so on. The available graphs have details that are available with a double-click

of the mouse. Each of these informative displays is printable.

In addition, reports can be scheduled to run on daily, weekly or customized intervals. The results can be stored or sent out via e-mail. The file formats include HTML, comma-separated value or .bmp and .jpg.

TrafficMax can also be configured to watch for threshold values when collecting these statistics. For example, finding a duplicate IP address may be a source of concern, such as a misconfiguration or a potential spoofer. TrafficMax can send an SNMP trap, alert the administrator with a page, send e-mail and even create entries in the NT event logs. TrafficMax also has the ability to block connections to sites and resources deemed inappropriate. It also employs the use of categorizing sites into groups. As with most products, the groups and categories defined by IntelliMax cannot be modified. But they can be updated automatically at specific intervals, manually, or not at all. Of course, you are free to create your own groupings and categories, even referencing those created by IntelliMax.

Blocking policies can be created using these groupings, individual sites or network ranges. The action can be to block or simply log the event. Specific ports or services can be named, and policies can also be set for certain times of the day. Another interesting feature is the ability to block based on the direction of traffic. For example, you may wish to block inbound requests but allow outbound requests. However, one drawback is that you cannot create a policy that will follow a user from workstation to workstation.

TrafficMax puts a lot of information at your fingertips. In fact, if you open up all the windows that are available, you could easily suffer from information overload. Luckily, the screens are very configurable. Since TrafficMax goes to the trouble of creating HTML files and Web-friendly graphics, it would be nice to see them create a Web interface, at least for reporting.

*Berkley is the LAN Support Supervisor at Computing Services for the University of Kansas. He can be reached at [berkley@ukans.edu](mailto:berkley@ukans.edu).*



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# Management

## Strategies

Career Development, Project Management, ROI, Business Justification

# Outfitting IT

**How to dress to impress for that crucial meeting.**

**W**hile IT workers may roam the office in shorts and sandals these days, almost everyone has been in a business situation that called for dressing up a bit more than usual.

Network World recently offered men pointers on what to wear to an important meeting ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 7955), and now we turn our attention to the women. Women generally have more wardrobe and color options than men, but freedom of choice also brings greater opportunity for making the wrong one.

Jean Gaffney, an image consultant in Littleton, Mass., offers the following tips for finding the right look for the occasion:

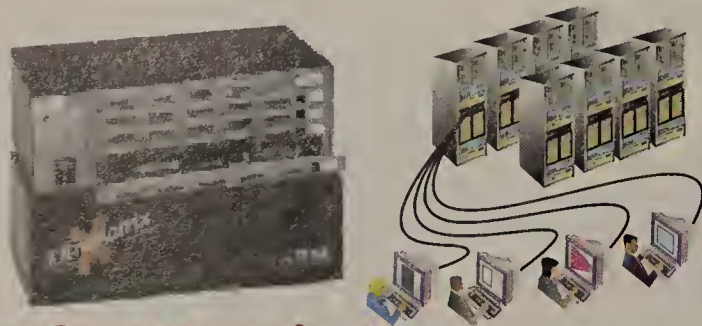
- Hair and makeup should be polished and refined. If you have long hair, put it up or pull it back. Choose subtle, natural makeup colors and avoid wearing bright eye-shadow or harsh eyeliner. Likewise, skip this season's trendy nail polish colors and stick to natural shades or deep tones of red.
- Choose conservative, understated jewelry in metal tones and leave the plastic hoops and dangling earrings at home. Limit rings to one per hand. Any purse or briefcase you carry should be made of leather.
- The next time you need to buy new eyeglasses, consider that tinted lenses impede making eye contact. Get nonreflective coating so light doesn't bounce off you.
- An important business meeting calls for a suit — either a coordinated jacket and pants or the more formal jacket and skirt. There's nothing more practical than investing in a jacket, skirt and pants in the same color and fabric, and mixing and matching the pieces with other garments. For example, you can pair the skirt or pants with a sweater set and use the jacket to top other slacks or a skirt. Just be sure your suit doesn't have contrasting buttons or trim that will limit your options.
- Choose nicely shaped classic clothing in wool, silk or other fine fabrics. If you wear a skirt, the hem should graze the kneecap or fall just below.
- Women can work with a much broader color palette than men, but keep in mind that the degree of boldness should match your personality. Pick a neutral solid color or subtle pattern and wear an accent color near your face. For example, you can highlight a gray, black, beige or navy suit with a bright blouse or scarf. Good accent colors include red, blue, green, yellow, orange, turquoise, pink and purple.
- Pick a blouse, sweater or shirt made of silk or very fine wool knit. Stay away from bulky sweaters or lots of texture. A jewel neck or open collar is fine as long as it's tasteful and not too low-cut — Erin Brockovich is not the look you want to emulate. You should never bare your arms in a presentation, so don't wear a sleeveless shell unless you plan to keep your jacket on.
- Even when it's 95 degrees outside, hosiery and close-toed shoes are still musts. Wear leather shoes with a 1- to 2-inch heel and a thin sole, not clogs or platform shoes. Suntan-colored nylons don't work for everyone — the key is to pick a color that matches your skin tone.





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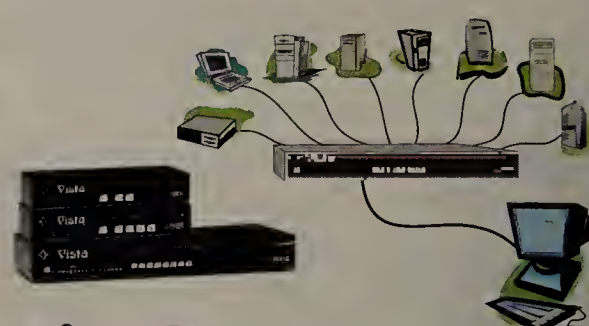
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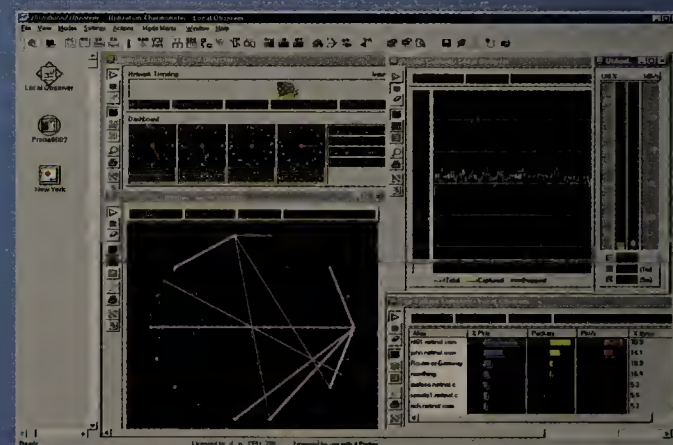
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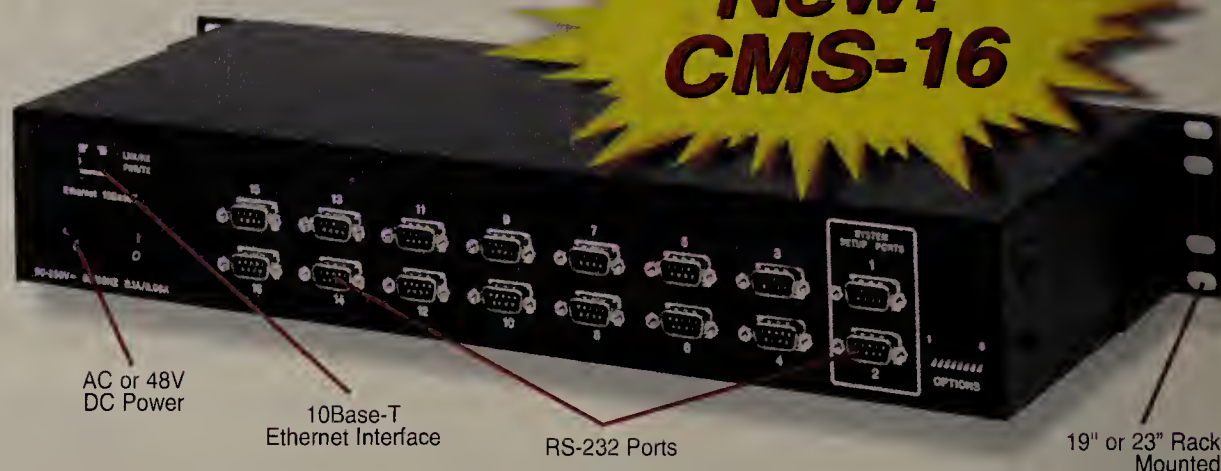
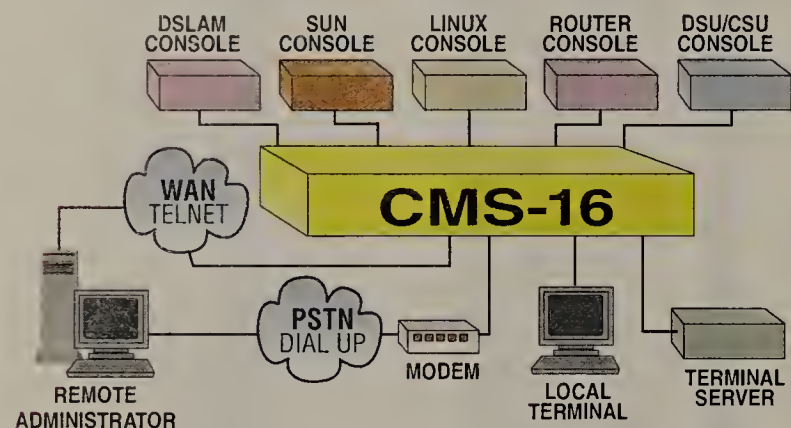
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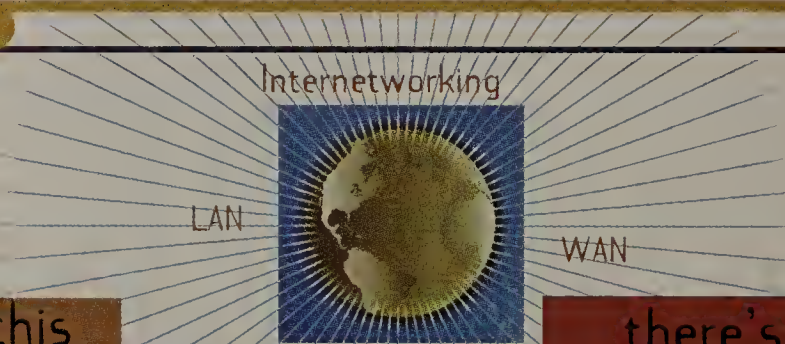


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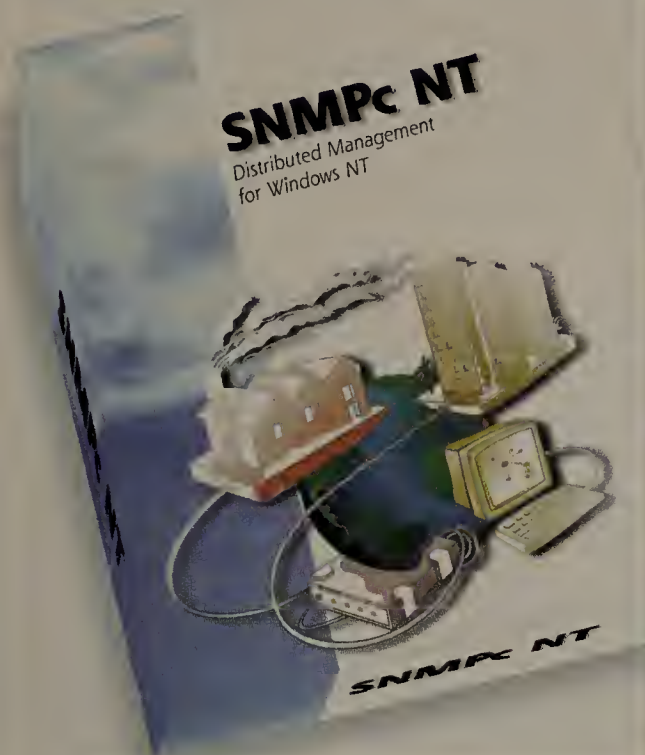
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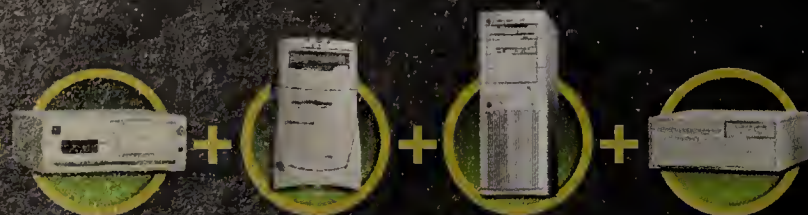
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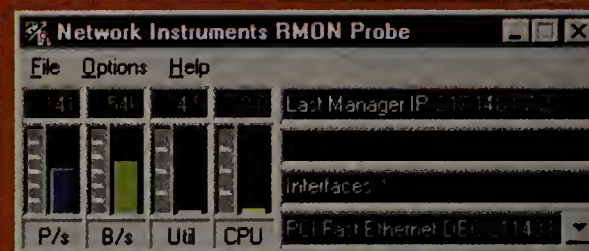
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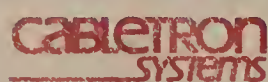
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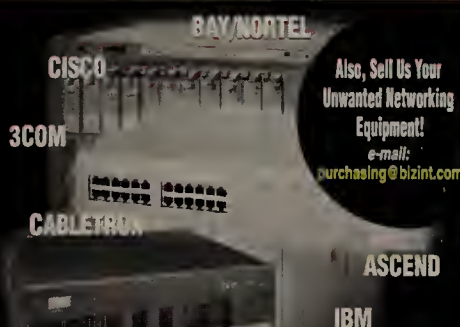
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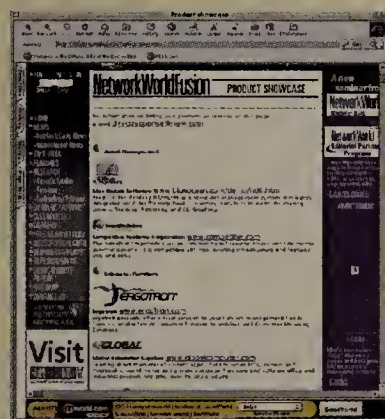
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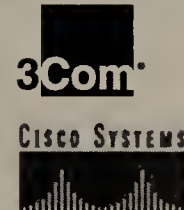
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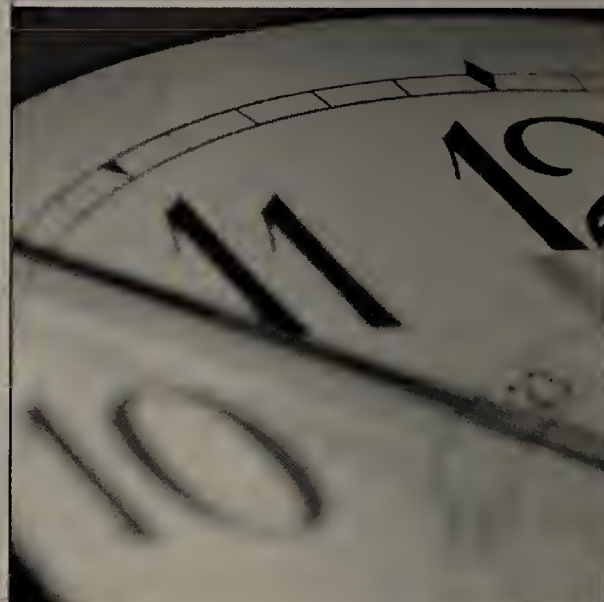
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Design, develop and test the MATLAB family of products. Programming experience in MATLAB, and/or C, C++, Java is required.

### Applications Engineer

Provide support and guidance to users of The MathWorks products, and assist them in developing solutions to their engineering problems using our tools. This person should have experience in applying CAE tools to real-world engineering problems.

### Communications Engineer

Develop and enhance state-of-the-art algorithms used to simulate and analyze advanced communications systems. Prior experience simulating communication systems using MATLAB. Strong theoretical knowledge of advanced communication systems and algorithms.

### Business Applications Developer

Develop and implement solutions utilizing a variety web-based technology, application development tools, and front end reporting tools that will enhance customer service business processes.

### Technical Support Specialist

Provide advanced technical support which includes designing, developing and delivering training sessions on our products to Engineers within your department, and attending trade shows to demonstrate the capabilities of our products. One year of programming with MATLAB is required.

### Tools Engineer

Enhance and maintain internal Web-based defect-tracking tools. Enhance and maintain Web interface to source code control and configuration management. Experience developing and/or designing for the web. Experience with some or all of the following: UNIX, Perl/CGI, SQL, HTML, and Java.

### Training Engineers

Develop and provide product training courses to users of MathWorks products. Engineering degree and experience working with CAE tools as applied to engineering problems.

### Quality Engineer

Develop test suites and use MATLAB to test The MathWorks products. Programming experience in MATLAB, and/or C, C++, Java is required.

### Communications Segment Manager

Responsible for all aspects of marketing our communications products and managing relationships with partners who complement our production the design of communications systems and related semiconductors. This position requires substantial telecommunications industry experience in both engineering and technical marketing roles of which 2 years of experience should be as an Applications Engineer.

The aforementioned positions at all levels require a minimum of a BS or MS in Computer Science, Engineering, Math or related degree and 0-5 years experience with MATLAB, Simulink, RTW, Controls, or DSP Environments.

### Technical Marketing Specialists/Managers

Identify, develop, and implement tactical programs and participate in strategic marketing direction to leverage The MathWorks current presence and continued growth opportunities in market areas for the entire MathWorks products line. Degree in Engineering with industry experience in engineering, sales, marketing, or technical sales support.

### Sr. Software Engineer

Lead the development and design of one of the MATLAB family of products. The requirements are a minimum of a Ph.D. in Computer Science, Engineering, Math or related degree. Programming experience in MATLAB, and/or C, C++, Java is required. Experience in Simulation, DSP, Image Processing or Controls is required.

### Additional Opportunities Include:

- GUI Engineer
- Data Acquisition Engineer
- Java Engineer
- Technical Writers
- Controls Engineer

For fastest consideration interested candidates should e-mail their resume, indicating position of interest to: [resumes@mathworks.com](mailto:resumes@mathworks.com). Attn: Human Resources- Job Code: IW6/00. The MathWorks Three Apple Hill Drive Natick, MA 01760-2098 Fax: 800-434-8967. For details, visit our web site at: [www.mathworks.com](http://www.mathworks.com)

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OF MATLAB

The  
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WORKS**  
Inc.

[www.mathworks.com](http://www.mathworks.com)

### Systems Analyst

wanted by Technology Solutions Co in Yadkinville, NC. Must have BS in Engg & 3 yrs computer exp.

Respond to: Colleen Crittenden, HR Dept, Unifi Technology, 2815 Coliseum Center Dr. Charlotte, NC 28217

### Engineer Build/Release

wanted by Web Research Engine Production Co in Cambridge, MA. Must have BS in Comp Engg & 1 yr exp in Build or Release Engg.

Respond to: Prudence Sinclair, HR Dept, Northern Light Technology, LLC, 222 Third St, Ste 1320, Cambridge, MA 02142.

Senior Consultant-Expert - Provide consulting services for the Business Solutions Group using expertise in any one of the following areas: Asset Management, Financials, Controlling, Human Resources, Materials Management, Production Planning, Plant Maintenance, Project Scheduling, Sales and Distribution, Quality Management, Basis or ABAP capabilities. Use knowledge of one functional area of R/3 including integration with other modules to implement R/3 module specialty independently. Build sales relationships and participate in sales presentations, lead the development of presentations and end products, as well as participate in client and internal presentations. Requirements include a Bachelor of Science Degree or equivalent in Computer Science, Management Information Systems or related field with at least three years of experience in job offered or related field of functional or technical R/3 experience. Applicants must have unrestricted authorization to work in the United States. Salary \$115,000/year. 40 hours/wk. Respond with two copies of resume to Case #20000509, P.O. Box 8968, Boston, MA 02114.

Software Engineer: Facilitate development of software design, evaluate end user tool options, provide solution alternatives, prototypes, validate tech design; analyze & develop OLTP & MIS systems for financial institutions. Utilize PowerBuilder (frontend), C++ (mid tier), UML (modeling) & RDBMS/DMS systems like Sybase, Oracle, SQL Anywhere, Watcom. Design GUI using VB, Rational Rose. Assist in maintenance of Sybase Server; monitor performance of software & coordinates. Participate in testing software & design & training programs in tech aspects of software design. Design user manuals & oversee custom installation of software. Req: Masters in Comp Sci or Math or Engg or equiv & 3 yrs exp in job offered. In lieu of above will accept Bach in specified fields & 5 yrs progressive exp in job duties listed. Exp gained while completing Bach or Masters program will be accepted. \$65K/yr, 40 hrs/wk, 9a-5p. Interested applicants apply to nearest Job Svc ofc or submit resume to Job Svc, 500 W. Trade St, Charlotte, NC 28202. All resumes must include applicants SS# & JO# NC2627936 & DOT 030.062-010.

### Principal Applications Analyst

wanted by New Jersey Pharmaceutical Co. for job in Hopewell, NJ. Must have Bach in Engg or Comp Sci & 3 yrs programming experience.

Respond to: Carol Wolochowicz, Bristol-Myers Squibb Company, 100 Nassau Park Blvd., Princeton, NJ 08540

### SAP Project Manager

wanted by online brokerage firm in Edison, NJ. Must have Masters in Business Admin, Comp Sci or Engg & 6 mos software or systems exp.

Respond to: HR Dept/GC, Datek Online Management Corp, 399 Thornall St, Edison, NJ 08818.



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#### Programmer Analysts

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#### Sales Engineers

#### Consultants

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#### Marketing Managers

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Manager, Systems Support. QUALIFICATIONS: MS in Computer Science. Minimum three years work experience related to the areas outlined below, three of which are University-related. Both theoretical and practical knowledge of and administrative experience with computer operating systems (SunOS, NetBSD, LINUX, Windows, MacOS), their interoperability (CAP, Samba, NFS, DHCP), computer networks and management (Ethernet, ATM, TCP/IP, Myrinet, SNMP), parallel computing (PVM, MPI), and programming (shells, Perl, C, C++, Java, Prolog, SOL, CGI, TCP/IP network programming) required. Administrative experience with Beowulf or a similar type of system required. Theoretical knowledge of X11, HTTP, SMTP, DNS, NIS/NIS+, NTP, POP, IMAP protocols and experience with administration of X11, web, e-mail, NIS/NIS+, time and print servers on UNIX, and installation of large software packages including X11, Emacs, LATEX, MPI, SML/NJ required. Experience with BudTool or similar network backup system required. Experience with network and system security administration (Tripwire, Secure Shell, Firewalls, Kerberos, PAM) required. Familiarity with interfacing vBNS required. Demonstrable analytical skills, skills in short and long term planning, and ability to manage a group of professional staff and students. RESPONSIBILITIES: Maintain research and academic network of Sun, PC, Macintosh and Xterm systems; analyze active computer industry trends and standards in order to apply them and keep the department at the leading edge of computing technology; provide technical assistance to members of the department for the implementation of grant proposals; supervise, direct and evaluate assigned staff; administer TCP/IP and NFS on Ethernet; analyze, implement and maintain special research systems (clusters of both parallel and uniprocessor machines: ATM, Myrinet, BIP, MPI); maintain large application packages such as X11, Motif, Emacs, MPI, LATEX, and others; analyze departmental needs and develop software packages to support curriculum development; UNIX system, backup and security administration; web programming; web, e-mail, DNS, NIS/NIS+, time, and print servers administration; provide courteous and efficient service to users. SALARY: \$34,890 - \$52,346 DOO.

WORK SCHEDULE HOURS: 8 a.m. - 5 p.m.

APPLY TO: Submit cover letter, resume, and official transcript to:

New Mexico Department of Labor  
226 S. Alameda St.  
Las Cruces, NM 88005  
Job Order No. NM1020905

Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. At a senior level, design & develop internet/world wide web application interfaces for business software applications using Component Object Model & Distributed Component Object Model technologies. Analyze requirements. Create designs & design documentation. Code, test, & de-bug the software application interfaces. Use Visual C++ & Visual BASIC in the design & development process. Provide technical assistance & mentoring to Programmer/Analysts. Requires Master's or foreign equivalent in comp. sci., comp. eng., or related field (incl. physics); working knowledge of the design & development of software applications using Component Object Model & Distributed Component Object Model technologies & Visual C++ (working knowledge may be gained through employment experience or in an academic setting). 8am-5pm, M-F; \$66,100/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4664923.

Manager, Database Group: Salary: \$95,000/yr. Hrs: 40/wk; 9:00 am to 5:00 pm; for a company that specializes in sales, configuration and installation of workstations in the US and to selected Latin American countries based in Boulder, Colorado: Direct, manage and plan the operational and administrative activities of the databases and guide the Database (DBA) group. Plan goals and objectives for the DBA group and plan the career growth and development of the DBA team. Plan and manage the budgets of the DBA group. Review, evaluate and prepare performance appraisals of the DBA group. Assign personnel to various projects and direct activities of the group. Provide technical advice and support to the IT department. Interface and co-ordinate with other IT groups and end-users. Direct the design, testing, implementation and maintain the organization's logical and Physical databases. Responsible for the development and enforcement of standards for the design & use of databases. Maintain the integrity of corporate databases by insuring the use of appropriate tools and RDBMS systems for optimal performance. Define and setup database and security procedures. Plan and extend DBA group support on a 7 x 24 basis. Manage & maintain large Oracle databases and Oracle Applications (10.7 and higher). Plan & guide all future databases and ERP (Oracle Applications) upgrades. We require a M.S. degree in Computer Science or foreign equivalence and 5 years of experience in management and with Oracle Databases/ Applications and UNIX platforms.

We are an equal opportunity employer. Only individuals with authorization to work permanently in the U.S. need to apply. Send resume and cover letter to: Jim Shimada, JO# 99-766 Colorado Department of Labor and Employment, Office of Employment Programs, Two Park Central, Suite 400 1515 Arapahoe Street, Denver, CO 80202-2117.

Technical Consultant sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. Implement client/server and web-based enterprise resource planning software applications at client or business partner sites. Integrate the ERP software applications with the new or legacy applications and with ORACLE and SQL/Server relational database management systems, and with UNIX and Windows NT operating systems. Upgrade software applications to meet the specific needs of the client. Engage in performance tuning and business process re-engineering. Troubleshoot and resolve problems and issues that arise during the implementation process, and provide user training and support. Use Visual BASIC, C, and JAVA in fulfilling these responsibilities. Requires Bachelor's in comp. sci., eng., or related field (incl. bus. admin.); 1 yr. exp. designing, developing, implementing, or performance tuning ERP software applications; working knowledge of ORACLE & SQL/Server relational database management systems, & UNIX. 8am-5pm, M-F; \$59,650/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4665110.

Technical Consultant sought by company in Boulder, CO specializing in consulting to work in Boulder & other unanticipated job sites in the US. Implementation and customization of Oracle applications including system administration, application developer, financial and manufacturing, using Developer 2000 (Forms and Reports), PL/SOL, Browser, SQL+ and SQL Loader, Oracle Forms 4.5, Oracle Reports 2.0 and 2.5. Develop custom GUI screens, reports, Alerts, and interface programs for Oracle applications. Use Explain Plan and tkprof utilities to tune Oracle SQL queries for optimum system performance. Train users and technical staff in Oracle tools and Browser, Develop Customer Relationship Management (CRM) applications. Requires a Master's degree or equivalent specifically, this position requires a Master's degree or foreign equivalent in comp. sci. or comp. applications, or a Bachelor's degree or foreign equivalent in comp. sci. or comp. applications plus 2 years' progressive software development experience; working knowledge of customization of Oracle applications using Oracle tools including Developer 2000, SQL+, SQL Loader, and PL/SOL. 8am-5pm, M-F; \$77,000/yr. (3 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4664920.

#### MIS Network Engineer

sought by Computer Distributor in City of Industry, CA. To perform installation, customization & modification, documentation, technical service & procurement of h/ware & s/ware for WAN. Must have BS in Comp Sci.

Respond to: HR Dept., Max Group Corporation, 16605 Gale Ave, City of Industry, CA 91745.

Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. Under close supervision, design & develop client/server software applications & tools, including graphical user interface (GUI) development. The software applications interface with a variety of relational database management systems. Analyze requirements. Create designs & design documentation. Work is closely monitored. Code, test, & de-bug the software applications & tools. Use JAVA, C++, C, & HTML in the design & development process. Requires Bachelor's in comp. sci. or related field; working knowledge of C++ & GUI development (working knowledge may be gained through employment experience or in academic program). 8am 5pm, M-F; \$52,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4664926.

Software Engineer (multiple openings): Under close supervision, analyze and resolve complex technical problems of computer software systems, specifically RDBMS products and applications. Assist users to solve problems, recommend technical solutions, develop workarounds and resolve bugs. Document solutions for technical problems. Document test cases and bugs. Positions require: Bachelor of Science in Computer Science or related field, or foreign equivalent. Education or experience background must include 1) C 2) UNIX 3) RDBMS 4) SQL 5) PL/SQL 6) SOL/Plus 7) Java. \$44,300 per year. Job site: Colorado Springs, CO. Application is by resume only. Send resume to Colorado Department of Labor and Employment, Employment Programs, Attn: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number CO4663295.

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost constraints. Consult with clients to define needs or problems. Use of COBOL, JCL, IMS, DB/DC UNIX and DB2. Reqs. Master's Computer Science, Computer Eng., Information Systems or related field of study. Plus 6 months in the job offered or 6 months in a related occupation such as Programmer Analyst and/or Consultant. \$66,0580/year, 40/hrs/wk, 8:30 AM-5PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4664930.

Product Development Manager, Software Developer & Software Architect: Several senior and entry-level positions available for qualified candidates possessing MS/BS or equivalent and relevant work experience. Work with some of the following Java, C++, XML, UML, CORBA & OFX. Must be willing to travel and relocate as required.

Fax resume to 724 Solutions, HR Dept. attn: Khanh Criswell at 650-526-3810

Network Engineer. 8:30a-5p. Mon-Fri. \$60k/yr. Design, develop, implement and maintain the local area network for the company's clients. Analyze and resolve problems of intent, inaccuracy or feasibility of computer processing. Install and administer network using Windows NT, Novell NetWare 3.12 and Network Operating Systems. Design and develop real-time multi-level, multi-facilities work flow reporting model for various network/network applications. Req. MS in C.S. or Comp. Applications with one year direct experience. Applicants must have proof of legal authority to work in the U.S. Resumes to: Il. Dept. of Employment Security, 401 S. State St. - 7 North, Chicago, IL 60605. Attn: Joanne Breau, Ref# V-IL 23122-N. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME AND COVER LETTER.

Sr. SW Eng'r: Res'ch, dsgn, & dev'p distributed comp. env'r'm't w/ Borland Entera DCE product, OSF, & OMG's (Obj. Mgt Group) COBFA; Perform db adm'r funct'n for relat'lal db server Oracle7.3 on PL/SOL, Sun Solaris & SCO Unixware; Dsgn & maintain internet electro'c commerce strategy w/ BEA sys' WebLogic Enterprise & Allaire's ColdFusion; Dsgn & maintain the source code control, configurat'n & release mgt proced'r for all sw. 40h/w, 8-5, \$78k/y, MS in Eng'g/comp. rel'd fields, w/ 2 yr in any posi'n w/ DCE & PL/SOL. Or BS w/ 5 yr post-bach'r prog've wk exp. Resume to Ms. Gaston, 4040 Seven Hills Dr. #166, Florissant, MO 63033 Re:Job# 228804

Exec Search, Inc. Consulting firm seeks Programmer/Analyst, Team Leaders/Managers & System Administrators for its Milwaukee, WI office in the following areas:

- ORACLE Application, Developer 2000 (Forms & reports), Designer 2000
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- System Administrator - Unix/NT/Lotus Notes
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Qualified applicants should hold a Bachelor of Science degree in Computer Science or related field/or equivalent.

Apply w/ resume to  
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P.O. Box 579,  
Carlisle, PA 17013  
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web site at [www.execsearchinc.com](http://www.execsearchinc.com)

Maintenance Programmer: Yorkville, IL with MS in Mgmt. Info. Systems to program, design & enhance portfolio mgmt. software according to the needs of clients & to correct program errors, test program changes & consult with client services personnel & clients regarding program features & changes. 40 hrs./wk. from 9am-5pm at \$44,460.00 per year. Must have proof of legal authority to work in the U.S. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-7 North, Chicago, IL 60605 Attn: Leila Jackson. Reference #V-IL 20615-J. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

#### Systems Analyst

sought by Georgia-based S/ware Engg Firm for job in Overland Park, KS. Must have BS in Comp Sci, Comp Engg, Math or related field & 6yrs exp reviewing reqmts & assisting s/ware teams in Object Oriented Analysis/Design of components for distributed telecomn applics.

Respond to: Attn. Sean Rose, Iconix Systems Engineering, Inc, 284 S. Main St, Ste 700, Alpharetta, GA 30004.

#### Senior Software Engineer

wanted by Web-based service product Co in Austin, TX. Must have Bach in Computer or Electrical Engg or Comp Sci & 3 yrs s/ware related exp.

Respond to: HR Dept, Ineto, Inc., 1122 Capital of Texas, Hwy S, Ste 150, Austin, TX 78746.

#### Programmer Analyst

wanted by Michigan based Computer Consulting Co for job locs throughout the US. Must have Bach or equiv in Comp Sci, Comp Engg, Elec Engg or related field.

Respond to: HR Dept, Systems Technology International, 39555 Orchard Hill Place, Ste 530, Novi, MI 48375.

**Database Analyst**  
(multiple positions) (Midlothian). Oracle database design & administration. Develop packages, procedures & functions in SQL/PLSQL. Create Shell scripts in UNIX. Evaluate interface btw hardware/ software & operational/ performance of systems. RECD: MS or equivalent experience in job offered. Salary low 60's. Send resumes to: Chaparral Steel, 300 Ward Rd. Midlothian, TX 76065, Attn: Sandy Harrison.

Design, develop and implement ERP applications. Analyze feasibility of design. Administer database includes installation, integration, migration, interface, testing, upgrading, tuning, trouble-shooting, and technical management. Tools used are PeopleSoft and Oracle. Req. Bachelor in EE or Comp. Eng. and 1 yr. exp. Send resume to Leah Blackwell Griffin, Blackwell Consulting Serv., 100 S. Wacker, #200, Chicago, IL 60606.

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Senior Consultant: consult with clientele and provide professional advice regarding systems & applications that are of particular value for their business needs; apply methodologies, tools, and techniques to help functional users or technical associates develop & document application system specifications and requirements for complex systems and/or applications using leading edge technologies; design, develop and implement software applications using Java, C++, CORBA, Rational Rose, Select OMT, Visio, JBuilder, Symantec Visual Café, Oracle, Microsoft Windows, Trade Ex & Sun Solaris. Bachelor's degree in Computer Science required. Two years experience in the position or two years as a systems analyst and/or software engineer required. Related occupation must include experience in designing, developing and implementing software applications using Java, C++, CORBA and Rational Rose. 40hrs./wk.; 9:00 a.m. – 5:00 p.m.; \$65,000/year. Send resume to Dept. of Labor/Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302-0869. Job Order #: FL-2085322

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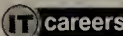
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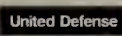
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MONDAY, JULY 24

HILTON ALEXANDRIA MARK CENTER

#### SAN DIEGO, CA

TUESDAY, JULY 25

SAN DIEGO CONVENTION CENTER

#### PHILADELPHIA, PA

TUESDAY, SEPTEMBER 12

PHILADELPHIA LOEWS HOTEL

#### NEW YORK, NY

TUESDAY, SEPTEMBER 19

MADISON SQUARE GARDEN EXPO CENTER

#### LOS ANGELES, CA

MONDAY, SEPTEMBER 25

LAX SHERATON GATEWAY HOTEL

#### CHICAGO, IL

TUESDAY, SEPTEMBER 26

NAVY PIER

#### DALLAS, TX

TUESDAY, OCTOBER 3

HYATT/UNION STATION

#### DETROIT, MI

TUESDAY, OCTOBER 17

SOUTHFIELD CIVIC CENTER PAVILION

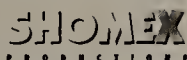
#### HOUSTON, TX

TUESDAY, OCTOBER 17

HOUSTON ASTRODOME USA

**CALL 1-800-562-7469 FOR INFORMATION ON EXHIBITING OR ATTENDING!**

If you can't make it to the events, submit your resume at [BestDiversityEmployers.com](http://BestDiversityEmployers.com).



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### Andersen Consulting Open House

Thursday, July 20, 4:00 p.m. – 8:00 p.m.  
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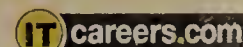
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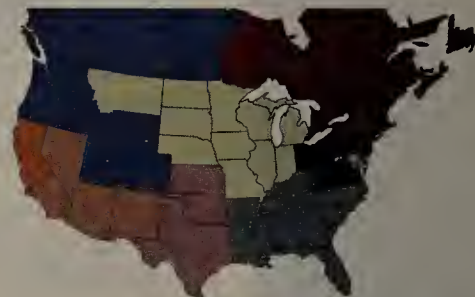
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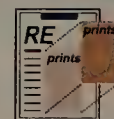


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## Factory, Continued from page 1

This new network backbone allows Fanuc engineers to remotely monitor and control factory equipment over the Web to find out why it is running slow and to prevent it from breaking down.

The network also allows manufacturing line managers to provide such statistics as boards produced, orders shipped and defects found directly into the plant's enterprise resource planning (ERP) systems for executives to evaluate. Eventually, the plant will make this factory floor data available to its suppliers over the Web to improve the inventory process.

"Right now, when a job comes into the plant, the probability that we have all the parts on site is only 5%," says Christopher Conti, an operations manager at the Fanuc plant. By sharing information with suppliers, Conti predicts he can improve that figure to 70% — an efficiency gain that translates into faster customer deliveries.

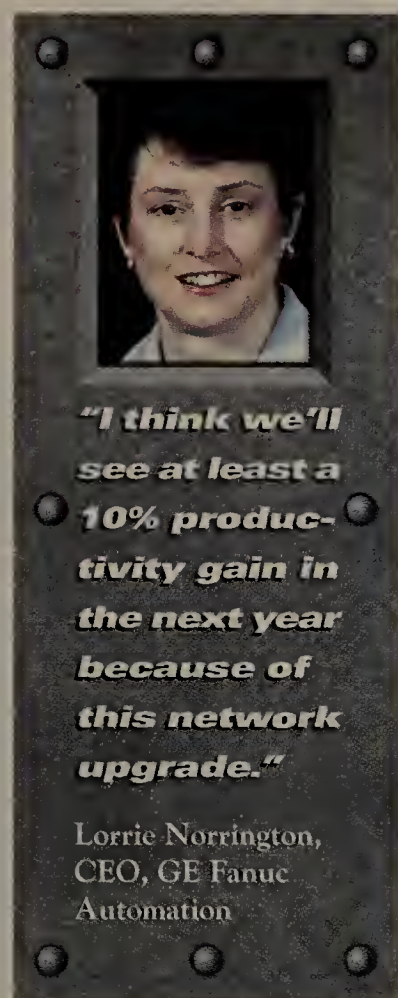
## Million-dollar upgrade

The Fanuc plant has spent more than \$1 million upgrading its manufacturing line network to integrate Ethernet and TCP/IP with its control systems. Over the next 12 months, the plant will drive these Internet standards down to the control system devices to provide an unprecedented level of data integration between the factory floor and the rest of the organization.

"The payback will come immediately in labor productivity," says Lorrie Norrington,

CEO of GE Fanuc Automation. "We'll also get cash back on inventory and improve our customer satisfaction."

Norrington's goal is to make



the Fanuc plant a showcase for adopting Internet standards on the factory floor. "I think we'll see at least a 10% productivity gain in the next year because of this network upgrade," she adds.

GE Fanuc isn't alone. Companies rolling out Ethernet and TCP/IP to connect their factory floors to their front offices include Boeing, General Motors, Colgate-Palmolive and Cenex Harvest States, the nation's largest cooperative oil refinery.

The trend picked up

momentum last month when GE teamed with Cisco to form a joint venture that will design, install and support manufacturing networks built on the latest Internet technologies. Officials at GE Cisco Industrial Networks, also based in Charlottesville, Va., expect to bring in \$100 million in revenue by 2003.

"Ethernet on the factory floor is a very strong trend, but it's just beginning," says Dick Caro, vice president of ARC Advisory Group, a Dedham, Mass., manufacturing consultancy. "There are just a handful of people using these methods, mostly for pilot projects."

Long the standard LAN technology in corporate offices, Ethernet is now being used to connect and control the pumps, gauges, valves, engines, lasers, sensors, switches and drives on manufacturing lines. The reasons behind this trend are that Ethernet devices are faster and less expensive to maintain than special-purpose industrial network devices.

Another advantage of using Internet technologies in manufacturing is the ability to conduct remote diagnostics and preventative maintenance on equipment over the Web — a big cost savings when compared with sending a technician out into the field for repairs.

"Where you have intelligent devices in the field, the diagnostics for these devices can be brought back to the end user on a Web page," Caro says. "You can do diagnostics or repairs of a machine from the control room instead of wheeling up a PC and an oscilloscope."

The adoption of Ethernet and TCP/IP on the plant floor is part of a broader push toward enterprisewide information integration. Many leading manufacturers have connected their office systems to their suppliers and customers over the Web. Now they want to integrate factory floor data to improve decision-making.

"Manufacturers need to either drive growth or they need to drive productivity," Norrington explains. "To do that, it's critical for them to get all the important information off the factory floor."

Today, manufacturing line managers tend to pull data out of their factory automation systems weekly or monthly and

See **Factory**, page 80



## The Scoop The news behind the news

### MANY PROTOCOLS POPULATE FACTORY NETS

**T**he biggest challenge for manufacturers planning to migrate their factory floor networks to Ethernet and Internet protocols is their huge investments in legacy equipment.

Until now, manufacturers used special-purpose network protocols such as Rockwell's ControlNet, Siemen's Profibus and Schneider Electric's Modbus Plus to connect industrial devices. Designed for heavy-duty use, these protocols provide ultrareliable connections and are offered in rugged hardware that can operate at high temperatures and in environments with lots of vibrations.

Many manufacturing plants run several of these industrial network protocols as well as Ethernet to connect PCs on the factory floor. Manufacturers see cost savings in pushing Ethernet down to the control systems first and ultimately to the devices, thereby eliminating other protocols and creating flatter networks.

"There are two kinds of networking technologies on the shop floor: There is the wiring between the machines, and there is the wiring between the PCs that control the machines," says Paul Swamidass, a professor at Auburn University who has studied factory automation. "The PCs are using Ethernet/Internet technologies, but the machines may not be. Now they're putting everything on the Internet."

The industrial protocols are being rewritten to support Ethernet and TCP/IP, and products that comply with the new standards are starting to hit the market (see graphic).

In a handful of cases, Ethernet and TCP/IP are replacing the ill-fated MAP/TOP network protocols that died along with the Open Systems Integration movement. Backed by Boeing and General Motors, MAP/TOP failed to catch on with industrial users because it was too complex.

"Users were not able to come to an agreement on the MAP/TOP specification, and it never had the product support," says Jack DeLeon, general manager of the communications business at Rockwell Automation. "The customers who installed [MAP/TOP] are migrating to Ethernet as fast as economics allows."

Until recently, Ethernet wasn't sturdy enough to handle industrial applications that require millisecond response times and 99.99% uptime, says Anthony Cinalli, vice president of technology at GE Cisco Industrial Networks.

Recent improvements in Ethernet performance and reliability make it a better fit for the factory floor. In particular, Ethernet can be switched to ensure that critical data gets priority — a feature known as determinism.

Ethernet also offers better scalability than special-purpose industrial networks and lower maintenance costs.

"Now manufacturers have to train their people in multiple protocols and keep spare parts for lots of different networks," Cinalli says. "Ethernet offers savings in training and maintenance costs."

— Carolyn Duffy Marsan



**GE Cisco's  
Anthony Cinalli  
says Ethernet  
offers manufacturers savings in maintenance and training costs.**

## Factory protocols

Factory floor network protocols are migrating to Ethernet and TCP/IP.

Protocol	Supporter	Strategy
<b>DeviceNet &amp; ControlNet</b>	Open DeviceNet Vendor Association, led by Rockwell with more than 300 members	Finished Ethernet/IP standard in March. Products due Q4 2000 and Q1 2001.
<b>H1</b>	Foundation Fieldbus group with 140 members	Finished high speed Ethernet standard in March. Products due Q4 2000 and Q1 2001.
<b>Modbus &amp; Modbus Plus</b>	Schneider Electric	Modbus TCP standard published in 1997. Schneider is shipping 70 products.
<b>Profibus</b>	Siemens	ProfiNet standard for Ethernet and TCP/IP due in 2002.



**Factory,**  
continued from page 79

manually plug it in to ERP systems. When the factory floor and back office systems are running on the same network infrastructure, this information can be easily shared in real time with suppliers and customers.

"IT and business management people now want [plant floor data] faster so they can make decisions more rapidly to customize orders or change manufacturing parameters,"

explains Jeff Jervah, U.S. automation product marketing manager for Schneider Electric, which sells factory control devices with integrated Web browsers.

Not everyone thinks manufacturers are going to see immediate benefits from these information integration projects. "The people who make the software for enterprises have these grandiose ideas about accessing shop floor information. . . . Nonsense. They have always been able to access that

■ **"The IT department already has the diagnostic tools, the people and the experience with Ethernet. It's natural for those people to work with Ethernet on the manufacturing floor."**

Dick Caro, vice president, ARC Advisory Group

information through [control devices]," Caro says. "The real reasons you can justify the investment in Ethernet are because of cost savings, speed and improved diagnostics. Those are the real benefits in the short term."

One company already reaping these benefits is Cenex, which uses an Ethernet and TCP/IP network to monitor oil pumping through a pipeline that stretches 300 miles from the Canadian border to a refinery in Laurel, Mont.

The network operates over a fiber-optic cable that runs parallel to the pipeline, with Ethernet modules at both ends and at a control center in the middle. The Ethernet network links the devices that control the pipeline's machinery, including valves, pumps, pressure gauges and temperature readers. Using software from GE, Cenex engineers can monitor and operate pipeline machinery remotely over the network. The network also carries real-time video of what's happening inside the pipeline.

"I can monitor the uptime on all the devices. I can do some diagnostics on each device and collect errors," says Bob Gauthier, a Cenex automation engineer. "If we had a leak, we could stop it in nanoseconds by shutting off the valves from 300 miles away."

## Pumped-up pipeline

The company recently spent \$50,000 to upgrade the pipeline network to support a 70% increase in the amount of oil pumped through. Now the pipeline handles 2,600 barrels an hour, sending oil to two refineries instead of one. To handle the extra data on the pipeline network, Cenex added four Cisco switches to segregate traffic and prevent collisions.

"Since we upgraded the network, we haven't had a failure," says Bob Gauthier, a Cenex automation engineer. "In three months, we haven't seen any data collisions. We've had no downtime."

Gauthier says Cenex may replace the control network with another pipeline that runs from Laurel, Mont., to Fargo, N.D., with a similar Ethernet backbone. And the Cenex IT department is trying to figure out how to integrate its pipeline control systems

with its business systems.

"We need to integrate the data on the pipeline with the inventory systems, especially for the purchase of crude oil in Canada," Gauthier says. "Now that's manually done. . . . But ultimately, we're looking for real-time integration."

This data integration trend has implications for corporate IT departments, which traditionally have not been involved in the selection of products used in factory automation. Now, however, network managers are being tapped to help design, install and maintain Ethernet and TCP/IP networks in manufacturing environments.

"Any substantial company with a couple thousand people will already have an Ethernet network installed at many levels with all kinds of switches and hubs," Caro says. "The IT department already has the diagnostic tools, the people and the experience with Ethernet. It's natural for those people to work with Ethernet on the manufacturing floor."

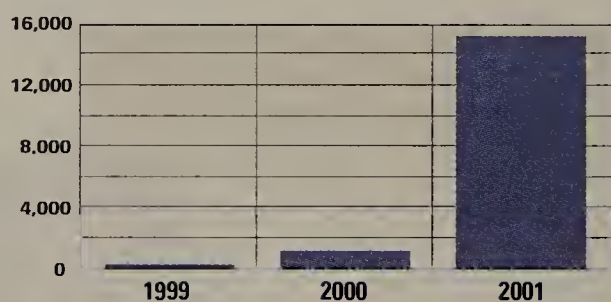
Corporate chief information officers are starting to evaluate factory automation plans, agrees Kevin Prouty, research director for discrete manufacturing at AMR Research in Boston.

"We're already seeing corporate IT departments setting guidelines that any piece of electronic equipment that comes in to the company has to support Ethernet and TCP/IP and that they have to be involved in guiding the purchase," Prouty says. ■

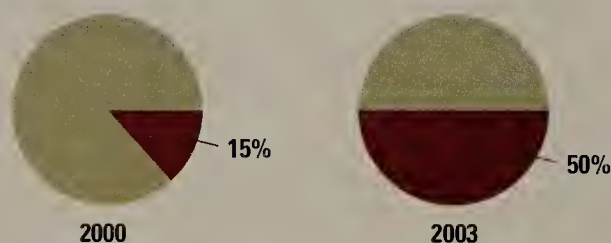
## Workin' the factory net

Industry analysts predict significant growth in the use of Ethernet in factory networks.

Ethernet network nodes shipped for factory automation applications (estimated):



Percent of manufacturing companies installing Ethernet for factory automation (estimated):



SOURCES: ARC ADVISORY GROUP, DEDHAM, MASS.; AMR RESEARCH, BOSTON

**Yipes,**  
continued from page 8

by the size of traditional services that jump from the 1.5M bit/sec of a T-1 line to the 45M bit/sec of a T-3 line. A customer could buy a 10M bit/sec service to transparently connect 10M bit/sec Ethernet LANs at separate sites without paying for an oversized T-3 connection.

One drawback is the service is only available in nine metropolitan areas: Boston; Chicago; Fort Collins, Colo.; Miami; Philadelphia; Palo Alto; Riverside, Calif.; San Francisco; and Washington, D.C. The company says it will be available in 20 cities by year-end.

B2B Connect, a local carrier in San Francisco, says it will buy bandwidth from Yipes to

support its service. B2B buys fiber lines to run into commercial buildings and sells VPN and applications services to business tenants. "I don't think we could have gotten a service like this from any other provider," says Dave Parker, B2B's director of sales.

He says traditional local exchange carriers have local fiber but lack the equipment to provide the same services Yipes does.

Mielke says as newer technology hits the market later this year, she expects other carriers to offer services similar to Yipes'.

Yipes' WAN service is based on Gigabit Ethernet. Yipes connects to a customer site with a fiber-optic cable, and installs an Extreme Gigabit Ethernet switch. The customer plugs a

router into the switch via an Ethernet port. The local connection ties into a Yipes point of presence, where traffic is routed on a Juniper Gigabit router to the Yipes WAN backbone. That core network is leased from a combination of Level 3 Communications, Qwest Communications and UUNET, as well as other carriers in certain markets.

Another drawback is that initially Yipes cannot offer end-to-end service-level agreements (SLA), but that will come later, company officials say. Yipes says it wants actual experience with its backbone providers so it can offer SLAs it can stand by. The company is shooting for an 85- to 95-millisecond delay or less end to end, says Gloria Farler, vice president of product marketing. ■

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## Fashion and IT: Give me Cobol or . . .

I write *Network World's* Web Applications e-mail newsletter ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 8947), and in a recent issue on Viador, a company offering a general-purpose tool for building portals, I wrote the following as a means of introduction:

*Gad but we are a fashion-driven industry. First it was the Internet, then Web sites, then portals and business-to-business and — on a parallel track — intranets, which were followed by business-to-employee and employee portals. When:*

*You're probably on the fashion fast track whether you like it or not and starting to look at how to go about building a business-to-business portal and/or an employee portal (according to*

*Meta Group, 85% of Global 2000 companies have either deployed, or are deploying, an employee portal).*

One of my subscribers wrote in complaining, "Supporting a serious enterprise, one that stakeholders depend upon for some portion of their livelihood, is decidedly not

a fashion issue. For employees in particular, pursuing technological 'fashion' is very risky to living indoors and eating regularly."

Allow me to go down a side track briefly and note that I would have replied to the reader this evening but my Pacific Bell DSL connection went down a few hours ago and stayed that way, so I am rather isolated. Of course, the installation engineer didn't leave a manual on the DSL modem, so I wind up calling SBC Communications' tech support whenever the thing stops working.

But call SBC DSL support and they route you around most of the known universe until you talk to someone who, while very pleasant, eventually admits she knows nothing about DSL and gives me the number for DSL technical services, which curiously is the same number that I was using when I got transferred to her. Can she transfer me? Nope.

So I call in again and get through to DSL support. Their technician is nice but essentially unhelpful. In fact, he admits his system is running slowly and that there's no consistency between his applications, so finding all of my information is apparently akin to arranging a leveraged buy-out of a major corporation.

Anyway, fashion. Do you think fashion plays no part in your IT life? Of course it does.

Fashion is all about what is stylish, what is hot and what is cool. Take Java. Is Java fashionable? You bet. Now consider Cobol. Unfashionable? Absolutely.

Yet which language has the most history? Which language is best understood? Which language is truly standardized? (Hint: The answer starts with a "C.")

So which language is the better vehicle for, say, handling financial transactions? Well, it looks as though Cobol might fit the bill rather nicely. "Ah-ha," you might say, "but Cobol doesn't support all the fancy input/output and libraries I need."

Rubbish! You can make modern Cobol do almost anything you need, and anything that isn't easily accommodated by Cobol can be handled by external libraries. Despite all that, everybody is jumping on the Java bandwagon.

Now don't get me wrong. I think Java is great in many ways, but the fact remains that we have a number of perfectly serviceable languages (such as C and Perl) that could be easily used and offer the benefit of being well understood.

But do we use them? Nope. Like demented test pilots we go and strap ourselves onto the Java testbed. That tendency is, if anything, more prevalent in the large IT shops than in small ones. And if that isn't fashion, I don't know what is.

Anyway, my point is not to put Java down but to illustrate that fashion is, whether we like it or not, a crucial part of our industry, just as it is in every other sphere of human endeavor.

*Fashion statements to [urcolumn@gibbs.com](mailto:urcolumn@gibbs.com).*



MARK  
GIBBS



The latest on the  
Internet/intranet industry

Every once in a while you've got to root for Goliath to kick David's scrawny butt.

A prime example will unfold later this month in San Francisco when those big, bad bullies from the recording industry finally corner **Napster** in a venue more meaningful than what has been a generally self-interested court of public opinion. Oral arguments are set to begin July 26 in the lawsuit brought by the **Recording Industry Association of America (RIAA)** against Napster, the company that has managed to hoodwink an inordinate number of otherwise logical people into believing that pirating copyrighted music should be called "sharing" instead of "stealing."

David is dead wrong in this case and it says here that a jury presented with all the facts will have little trouble reaching that conclusion.

They had better, too, because if Napster ultimately prevails, the concept of intellectual property will be headed the way of the eight-track tape player . . . not just on the Internet, but everywhere. And not just as pertains to music, but also books, magazines, newspapers, movies and the software you rely on every day. The "slippery slope" warning may get overused, but in this instance it's tough to see any outcome other than a quick slide into full-scale looting.

Last week Napster attorney **David Boies** — the guy who brought Microsoft to its knees for the government — practiced his riffs in front of an audience of reporters. According to Boies, Napster is just a plain ol' ISP that should not be held accountable because a miscreant or two might misuse their service, if such misuse were possible, which, of course, it isn't because we're talking about "sharing" not "pirating." And besides, he said, the RIAA is just like those meanies in Redmond, an evil band of capitalists drunk on power and hellbent on stifling competition.

If bluster is all he's got, don't look for this to be a long trial.

Here's David's problem: Downloading music through Napster is not like making a tape recording off a CD and giving that tape to a friend or five friends, as Napster fans like to claim. That kind of one-to-one or one-to-several sharing has gone on for decades with barely a harumph from the recording industry.

Napster is more like taking that homemade tape, producing an endless supply of copies and distributing them to anyone and everyone who has no qualms about accepting for free what he or she would otherwise have to pay \$15 for down at Circuit City. Napster's entire business — backed by tens of millions in venture capital — is built on two things: that few-to-countless-strangers distribution model, and the intellectual property of musicians who Napster refuses to compensate for their work.

Napster apologists maintain that any RIAA legal victory would prove short-lived given the proliferation of Napster-like file-sharing gimmicks on the 'Net.

Maybe that's so. But, if my business were at stake, I'd fight today and worry later about tomorrow.

You go, Goliath.

**Grab your calendar** because you will not want to miss our third monthly Webcast — **The Networked World** — this Friday at 1 p.m. EDT. Produced with our corporate cousins at [ITWorld.com](http://ITWorld.com), this show will focus on "Hacking back: Is cyber-vigilantism justified to protect your network?"

Buzz says, "Heck, no, leave that 'Make my day' stuff to Clint." But you'll want to hear from two real security experts — Winn Schwartau and Mich Kabay — as they join *Network World* Editorial Director John Gallant in a roundtable debate on this timely topic. You'll also get to vote on who wins. (Tiebreaker: Schwartau and Kabay duel at 20 paces.)

My own bit will be about "forced fun" in the workplace. Point your browser to [www.ITWorld.com](http://www.ITWorld.com) to register.

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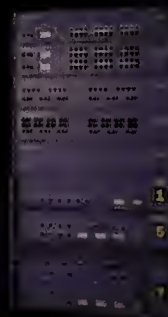
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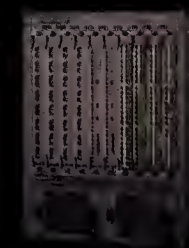
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